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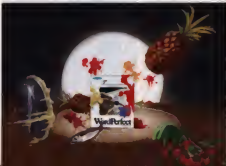
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TECHNOLOGY NEWS

Compiled by Cindy Krushenisky

Networks On Wheels



If you thought the kind of electronics incorporated into automobiles was incredible, wait until you see what's in the works now.

AT&T Wireless has purchased a large stake in CellPort Labs, a Boulder, Colo.-based company that has developed a universal interface that would allow the creation of local-area networks (LANs) in vehicles. (A LAN is a network in a limited area, ordinarily in an office or building.)

Why rewire your car as a network? With a network setup, you could connect your car to telephones and let it go "online."

Imagine a car that automatically dials 911 when the airbag is deployed. Or cars that can display short, incoming messages or news directly into a display on the dashboard. How about an intelligent tracking system that would use the global positioning system of satellites orbiting the earth to locate the vehicle and then offer route guidance and recommendations for bypassing traffic jams on that same dashboard display? And just think how a connected car could battle carjackings by automatically dialing police and using the global positioning system to track the stolen vehicle.

While none of these enhancements will be available immediately, you may begin to see traces of them sometime in 1996. AT&T officials expect that the advances will dramatically change automobiles, revolutionizing the way people use their cars just as LANs and modems transformed the way people use their computers.

Along the same line, ADT Security Systems and Rockwell Automotive have teamed up to create their own automotive emergency response network using Rockwell's Global Positioning System of satellites. Instead of wiring the automobile to automatically do the work, however, motorists would touch a button to summon police, emergency medical help, and roadside assistance. The GPS system then would track the automobile to indicate its exact location for rescue personnel.

ADT and Rockwell hope to introduce their system in 1996. Currently, Rockwell is producing test units to examine the system. ●

Scanning In Style

The United Parcel Service (UPS) recently made a deal that may get your packages to you even sooner and more efficiently. UPS signed a contract with Symbol Technologies to use Symbol's wearable bar code scanning systems to help with parcel sorting in UPS's 150 regional distribution hubs in North America.

The wearable bar code systems are miniature scanners that can be worn as rings, letting UPS personnel point a finger to scan a bar code. This way, their hands are free to sort and load packages at the same time. A basic computer is mounted on the wrist to process the information and communicate wirelessly to the host UPS computer.

UPS officials hope the compact systems, expected to be in place early in 1996, will improve accuracy and efficiency and speed sorting of the 11.5 million packages that UPS handles each day. ●

Opening A Whole New World

Broadband networking is a new way to transfer a lot of information, and it may someday bring you all kinds of channels for interactive TV. But today it's being put to the test for a nobler cause. Companies such as Intel, Sprint, UB Networks, and Worlds Inc. have joined the STARBRIGHT foundation (a sister charity of the Starlight Foundation) to create virtual worlds that can link seriously ill children from their hospital beds across the country using a state-of-the-art, broadband network.

In STARBRIGHT World, children can interact, explore, play, and communicate with each other. Children pick online personas so other children can see where they are and what they are doing in one of the three worlds: Tropical World, Cave World, and Sky World. Each world has its own feel and activities. For instance, in Sky World, children may fall through a funnel cloud to a unique place where they can build sand castles, playhouses, and forts by themselves or with friends. Voice-based communications and full-motion video also give kids too young or sick to type the ability to participate.

The virtual playspace was kicked off last year, first linking The Mount Sinai Medical Center in New York, Children's Hospital in Boston, Lucile Salter Packard Children's Hospital at Stanford, and Children's Hospital of Pittsburgh. The Children's National Medical Center in Washington, D.C.; the Children's Medical Center of Dallas; and UCLA Children's Hospital are expected to come online soon. ●

Calling Cards Go Whole Hog



The number of calling cards and calling plans available can be overwhelming. You can get cards from phone companies, banks, and credit card companies to make long-distance calls.

But before you decide card promotion can't go further overboard, consider a recent announcement from MCI. The phone company plans to market collectible, prepaid calling cards, perhaps inviting consumers to collect them like baseball cards.

Initially, MCI teams with Harley-Davidson to feature two of Harley's premiere motorcycles on the cards. The collectible cards will feature several of Harley's 1996 models, including the 1996 XL 1200c Sportster 1200 Custom motorcycle and the FXSTSB Bad Boy motorcycle with Genuine Motor Accessories.

Calling cards, MCI officials say, are great for people on the go, especially (of course) those on motorcycles. Collectible card users will be greeted with Harley news, events, trivia, promotions, and other interesting tidbits when they use the card. The cards are available from local Harley-Davidson dealers or by calling (800) RIDE-133. They are purchased in denominations of 20 units, with each unit equaling about one minute of domestic calling. The card costs about \$9 plus shipping and handling. ●

The CD Eraser



First there was CD-ROM (compact disc, read-only memory). You could access information off the disc, but that was it. Next, there was CD-R (compact disc, recordable). CD-R added the capability to create your own discs. But CDs are still one step away from working like diskettes; you can't erase information from CDs to make areas reusable.

Late last year, 10 major manufacturers, including IBM, Ricoh, Hewlett-Packard, Mitsubishi Chemical Co., Mitsumi Electric, Matsuhita Kotobuki Industries, Sony, 3M, Olympus, and Philips, announced they would support the development of an erasable CD format. Now one of the companies, Sony, has come forward with a proposed CD-E (compact disc, erasable) standard.

Sony's standard would allow room for 680MB of information on a disc, a little less than that on a CD-R disc. CD-E, however, lets data be updated and disc space reused. CD-E drives will be able to read CD-ROMs, as well as read and write CD-R discs.

Sony expects CD-E drives to be available sometime in 1996. The price, of course, probably will be well out of reach for most consumers. CD-R drives began at prices of several thousand dollars and are just beginning to drop under the \$1,000 range. Chances are good that CD-E drive prices will follow a similar route. ●

A Global Village Closer To Home

The computer world keeps talking as if the much-discussed Information Superhighway is going to place everyone in a sort of global village. Before the village goes global, however, maybe it should start at home.

Take, for instance, Arvida's Weston, which is located in Fort Lauderdale in southwest Broward County, Fla., and is home to more than 6,000 families. The community has its own Internet home page called TownTalk. In a service similar to an interactive community newspaper, residents can dial up school lunch menus, check the time of PTA meetings, or leave messages with a child's school. They also can organize a neighborhood meeting, check out local happenings, report a lost pet, share special interests with friends and neighbors via E-mail, or participate in the Virtual Townhall Forum. Representatives of various organizations have passwords so they can enter news and other information.

The virtual village, located at <http://arvida.towntalk.com/weston>, has a good chance of success. After a recent survey, almost 80% of Weston's respondents said they had PCs at home, and of those, 50% had modems. Businesses also have begun to sponsor sections. The local Blockbuster Video, for example, was an inaugural sponsor of the Weston News Section. ●

Jumping On The Internet Bandwagon

If you've gone on the Internet lately, you're joining quite a crowd. According to a recent Internet Demographics Survey by Nielsen

Media Research, there are about 24 million people in the United States and Canada cruising the 'Net. The study found that close to 11% of the U.S. and Canadian population 16 years or older had used the Internet during the fall of 1995.

Just what are they doing there? While on the World Wide Web, about 90% were browsing or exploring, about 55% were searching for information on products or services, and 60% searched for information about companies or organizations. (The World Wide Web is a widely used, menu-based program that provides links to other information sources on the Internet.)

Internet users are an ideal target for businesses, Nielsen Media's study found, since those online were found to be more educated and have higher incomes than the rest of the population. Some consumers—about 2.5 million so far—even have begun to make purchases using the World Wide Web. ●

Tech Shorts



Organizations from the United States, Canada, France, Japan, and Taiwan endorsed an Internet Content Selection (PICS) platform that would develop an Internet content labeling and selection platform letting Internet users "check the label" and control the kind of online content

they receive through their PCs. It's hoped the organizations will let providers voluntarily label their material and promote multiple third-party labeling services. We should see more about the PICS platform soon, as it is expected to be widely available over the Internet this year. . . .

While the ratio of students to computers is improving in the United States (currently 9:1), more than 50% of the computers are out-of-date and cannot be used to access the Internet, according to the K-12 Educational Market Report by the Software Publishers Association. Education also may run into a small roadblock in the days ahead. The study indicated that although funds still are available to help with technology purchases, it's anticipated that Congress will sharply cut that kind of funding, leaving states and local school districts to pick up the slack. . . .

Phoenix Technologies, Compaq Computer, and Intel Corp., released a BIOS Boot Specification late last year. (Your computer's basic input/output system is the set of routines that works with a computer's hardware to support transfers among the elements of the system, such as the disk drives.) PCs incorporating this specification will be able to boot from any device containing a new Initial Program Load (IPL) identification. You'll be able to boot from an IPL CD-ROM drive, PC Cards, network cards, and other bootable devices that once created confusion in your system's boot process. In your system's setup, the specification also lets you specify what priority different storage devices should have for booting. So, for instance, if you can't boot from the hard drive, the system would try booting from the CD-ROM drive, then from the network. ●

Two Brains Of Thought

Some people are math and science scholars. Some are writing whizzes. What happens when you need help with both? We found a product that can keep your calculations and your spelling accurate.

Seiko Instruments USA of Torrance, Calif., recently introduced the hand-held Spelling Calc (SC-1110), which combines a spell checker with a calculator in a slim, 4.5 x 2.75-inch unit.

It's a full-functioning calculator that helps with everything from metric units to calculating sales tax and tips. Spelling Calc also is a spell checker based on the Concise American Heritage Dictionary with more than 80,000 words in its memory, and a wildcard feature lets you enter question marks for letters in words you're unsure of.

We found the Spelling Calc, at \$20, helpful. It was easy to look up a word, calculate, and convert among measurement units. We did have some reservations, however. We didn't like that we had to come rather close to the spelling of a word to find it. We had to guess several times to come up with what we were looking for—you only get one answer at a time. And most word processing programs come with built-in dictionaries anyway.

Spelling Calc is the first in a line of combination products by Seiko. Future products include a Spanish/English translator that translates and conjugates verbs and a European language translator with five languages and a world time/alarm clock. For more information, call (800) 873-4508 or (310) 517-7810. ●



Radios Seen As Well As Heard

It seems computer companies want your computer to replace just about every electrical appliance in your home. Computers can receive television signals and telephone calls or play audio CDs and video games. Though it will be a while before your computer has a coffee-making feature, your PC can act as a radio receiver today.

Philips Semiconductors offers a Smart-Radio receiver module that delivers stereo radio signals, along with digitally transmitted text and data. Other PC radio receivers are on the market, but this radio can be seen, as well as heard.

Philips suggests plenty of uses for the Smart-Radio. Listeners could view information, such as the name of the radio station, the music format, the artist's name, and title of the song. Or they could see traffic bulletins, weather updates, emergency messages, and other types of radio-related information.

Users, of course, will need a multimedia PC with speakers to use Philips' Radio (Broadcast) Data System [R(B)DS] Radio PC Card. But should you run out and buy a radio tuner for your PC? Maybe not just yet. Philips' Smart-Radio has the support of the Electronic Industries Association, which has launched a \$1 million campaign

to install hardware encoders in the top 25 radio markets across the United States. It's up to the radio stations, however, to develop the visual/textual content to be broadcast, and it may take some time for this type of broadcasting to catch on.

Another catch is that the Philips Smart-Radio system is available in 1,000-piece quantities to original equipment manufacturers, meaning only some of the bigger computer companies are considering bundling the product with their systems, and Smart-Radio isn't readily available for average consumers just yet. For more information, contact Philips Semiconductors at (408) 991-2320 or its home page at <http://www.semiconductors.philips.com/ps/>. ●

From VCR To PC And Back Again



The holidays are over, and there's probably a stack of home videos cluttering your entertainment center. Along with priceless memories, they're filled with boring intermissions, fuzzy focusing, and a few seconds of the lens cap. A few products on the market let you edit out the boring parts or mistakes via your home computer. Reveal Computer Product's Video Artist claims it's the best one for novices.

Video Artist includes software and hardware features for editing and manipulating videos. For instance, image editing software lets you edit video images, clone images, change colors, add text on top of images, dissolve one scene to another, or apply special effects. You also can include photos scanned into the computer or photos already saved as files or morph one image into another with built-in morphing software. It's great for business presentations and training videos, as you even can capture pictures of your computer screen to add graphics and charts to the show.

Video Artist's included hardware requires you to open your computer and install an expansion card. You also need a multimedia computer with an SVGA monitor, a sound card, and at least 70MB of free hard drive space, though 200MB of space is recommended. The setup is a little complicated because you must hook your VCR (or laserdisc player), camcorder, or television to your PC so you can capture video images from these sources. The video you're working on is either taped to your VCR or saved to your hard drive (which is why you need so much free hard drive space).

Video Artist has about everything you need to create professional-looking videos—except for a scanner to convert photographs to digital files. Although it may be a little over the heads of real novices, an intermediate user should have few problems installing the hardware and figuring out how to use the software. Reveal even includes an "idea" book that gives you a few tricks of the video editing trade.

The Reveal Video Artist is available in most computer/electronics stores for around \$450. For more information, contact Reveal of Woodland Hills, Calif., at (800) REVEAL-1 or (818) 704-6300. ●

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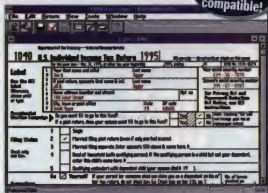
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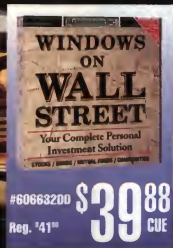


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Braving The Middle Ages



Clicking the film reel and camera icons in *Braveheart's* Movie section leads you to film clips and interviews.

The Middle Ages are probably one of the least known eras in history for most people. Recently, Hollywood has brought medieval history out of the darkness with movies such as Mel Gibson's "Braveheart," the recounting of the Scottish fight for independence from Britain. Now, Midisoft, in conjunction with Viacom, Paramount Pictures, and Icon Production (Gibson's production company), has released the *Braveheart* CD-ROM, an educational package that will appeal to history and film buffs alike.

The program's sections include: Archives, Society, Games, Warfare, and Movie. Archives provides timelines with hypertext links to biographical and historical text, which are accompanied by selections of artwork related to the current topic. Warfare lets users participate in or view re-enactments of battles using medieval weapons, while Society educates users in medieval art, culture, and lifestyle. Games has a trivia game and memory game, which, while entertaining, aren't the program's strong points. Unfortunately, the video segments, which are quite

beautiful when viewed at a larger size than a few inches square, apparently can't be viewed full-screen.

The Movie section includes biographies of and interviews with Mel Gibson, cast members, and members of the production crew. The biographies have short film clips that best illustrate the actor's performance and the character itself. Users learn about filmmaking by viewing storyboards, rehearsal footage, outtakes, and behind-the-scenes clips that show how the stunts and key scenes were executed. An Edit Suite feature lets users create slide shows from the library of clips.

The program's developers have created an attractive, appropriately medieval-looking interface with easy, point-and-click selection. Clicking the sword-and-shield icon in the lower-right corner accesses the program's menus. There's a lot of text to read, but clicking the microphone icon will start a recorded narration (with background music); we preferred listening to the narration while clicking through the artwork instead of reading the text ourselves. Text articles all have hyperlinks to other articles.

While the program runs well on Windows 3.1, it ran even better on Windows 95. The program's suggested retail price is \$49.95

For More Information:

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No Comprendo?



If you're planning a trip to Europe soon and your foreign vocabulary is limited to "bonjour," you may want to check out *Lingua Match* 1.0 to avoid a future faux pas (that's French for social blunder).

Learn basic vocabulary words or sharpen your accent in Russian, Spanish

(Castilian or Latin American), French, German, Italian, or English (British and American). *Lingua Match* concentrates on the bare necessities of everyday occurrences so you can ask for directions, read signs, order food, or take part in pleasant conversations.

Click a picture in the cartoon-like virtual city, and the native voice demonstrates the perfect pronunciation in whichever language you choose. Click an item as many times as necessary to memorize the word or pick up the exact intonation. This is one of the great things about *Lingua Match*; if you don't understand the word or phrase the first time, you can listen over and over again until you have it mastered. (We found that the voice is capable of rapping with quick click repetitions!)

Different scenes, such as a gas station, restaurant, office building, or Olympic event can be displayed for a word-stock variety. You can view the vocabulary words and commonly used phrases at any time to see the written form as well as hear the spoken one.

Lingua Match is a perfect travel companion for anyone going to any of the countries whose language is included in the program. If you find yourself unsure of a word or how to pronounce it, you can access, read, and hear the proper expression in a matter of seconds. Compare words and phrases from your native language to the translation in the language you're trying to learn. Or, if you'd like, compare and contrast two foreign languages at once.

Lingua Match can be used as a tutor for learning another language, as a helping device for foreign exchange students, or as a personal reference for business travelers and vacationers. You can learn more than 2,400 words and phrases from *Lingua Match*, which sells for a suggested retail price of \$49.95.

For More Information:

Lingua Match
D & D Computers
(800) 816-6848
(305) 220-6848 ●

Learn New Words By Following Breadcrumbs

Hansel & Gretel and the Enchanted Castle, by Terra Glyph, is a beautifully illustrated way to practice foreign language vocabulary. French, German, Japanese, and Spanish are all represented as both the primary and secondary languages for this version of Grimm's classic tale. The clever animation is accompanied by two original songs that captures the user's attention and makes the interactive animation entertaining whether or not you're practicing a particular language's vocabulary.

Although the user can click vocabulary items during pauses in the introductory action, the game begins after Hansel and Gretel have been lured to and imprisoned in the witch's confectionery castle. Hansel plays a game of Hide-and-Seek with Prin,



Click the tree, pond, or many other objects in this picture to hear its name in English, French, German, Japanese, or Spanish.

a mischievous imp with the ability to navigate the witch's house undetected. Prin has the key to the room where the witch is holding Gretel, but he wants Hansel to play Hide-and-Seek in order to earn the key. Prin uses words in the secondary language as the clues to lead Hansel to his hiding

place. Players can click particular objects in each scene and hear them identified in both the primary and the secondary languages, but if they choose not to, they might not recognize the clue that will lead to Prin.

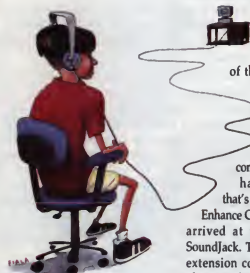
However beautifully done this interactive game is, there are still a few improvements that could be made. The vocabulary words are only spoken, and the program might be a more helpful learning tool if the user could see the word as well as hear it. By giving the user the written word at the identification prompt, this program could be helpful in learning a few basic words in several other languages instead of being used simply as a quiz for terms the user

may have already studied. The other drawback is that Prin doesn't make you chase him very long. You only have to find him three times, and the game is over. There are only two difficulty levels to the game play: easy and hard. Unfortunately, the challenge to the "hard" level is not much more difficult than the "easy."

Even with a few quirks, Hansel & Gretel, for a price of \$44.63, is an attention-grabbing way to practice another language's vocabulary.

For More Information:

Hansel & Gretel and the Enchanted Castle
Terra Glyph
(800) 929-9844
(708) 781-4119 ●



of the computer. Even plugging headphones into the jack provided at the front of your computer can leave you hanging by a leash that's just a tad too short.

Enhance Cable Technology has arrived at the solution—The SoundJack. The SoundJack is an extension cord for your headphones with a handy little volume control right at your fingertips. It lets two users plug in their headphones simultaneously so playing a game for two is no excuse for total audio mayhem. There is enough cord to reach around your computer and still leave plenty of

Room To Move

slack to let you move your head if necessary.

Enhance also provides a piece of self-adhesive tape that lets you stick the SoundJack to the side of the computer or another surface to keep it out of your way. We suggest considering the length of your headphones when fixing the SoundJack in a semipermanent position. The purpose of the SoundJack is listening convenience, which won't be enhanced if the SoundJack's headphone plug in is still too far away.

The nicest feature of the SoundJack is the easily accessible volume control that moderates the sound externally so you don't have to constantly

access the software volume control. There are two versions of the SoundJack—a beige one for adults and a purple one for kids. The children's version is \$5 more than the adult suggested retail price of \$24.95, but it includes a KidSoft CD that provides demos of 40 children's software packages.

For More Information:

SoundJack
Enhance Cable Technology
(800) 717-8757
(408) 232-0200 ●

The last time you tried to be polite and use your headphones while playing your latest multimedia CD-ROM, you ended up with the monitor stuck to your nose because the headphones need to be plugged into the back

See Egypt On \$50 A Day

Armchair travelers who long to visit distant locations but lack the necessary cash have a new destination on CD-ROM. The Discovery Channel's *Nile: Passage to Egypt* may help fulfill your craving for the wild side.

The program takes you on a tour of the Nile River, Stops along the way include the ancient Sphinx, bustling Cairo, and other equally exotic ports of call. *Passage to Egypt's* screen offers a full, 360-degree view of the action, giving you a look at Egypt in its very virtual detail. Your transportation for the voyage is a felucca sailboat, outfitted with important tools to aid you along the way. A map, a personal journal, and a media player help you interpret what you see in your journey. In case you get confused with all the choices you have, a well-stocked help feature tells you what each item in the felucca does.

As you travel, three-dimensional realistic scenery gives you a full picture of the land of Egypt. Upon reaching a new area, you can explore by looking around in all directions. Or, move in for a closer look at the

region through photographs and videos.

There are additional fun features, including several educational games. Travel through a temple in the Abu Simbel 3D Experience, where you play each game. The pharaoh Ramses leads you through his resting place and challenges you with deciphering hieroglyphs and saving statues from ruin. At each step of the way in any of these games, you can ask for help by clicking the question mark.

All in all, *Discovery has a winner in Nile: Passage to Egypt*. The CD-ROM offers much to explore, even if it is mere pixels instead of actual sand and papyrus. Nothing can beat actually being there, but at \$49.95, multimedia is a good compromise.

For More Information:

Nile: Passage to Egypt
The Discovery Channel
(800) 762-2189
(317) 579-0413 ●



Counting Calories On Your Computer

Balancing your diet can be as difficult as balancing the national budget. Trying to lose weight while eating nutritionally takes a lot of planning. *NutriBase Personal Nutrition Manager* takes much of the effort out of planning and tracking your meals.

Your whole family can track its progress; *NutriBase* lets up to five users create profiles containing information about their gender, age, weight, and activity level. From the information you provide, the program helps you set nutrition and weight goals.

One of the best features for many users is the vast database of foods that can be analyzed for such factors as calories and fat content. *NutriBase* has information on more than 45,000 foods, including menu items from 71 restaurants. New items can be added to the database; there's no limit on how many items you can add to the list. You also can add your recipes to the database. You can graph the data about any food or recipe in any of several formats, including pie charts and bar graphs.

There are calendars to track your weight and what you eat. To record meals, either in advance as a planning tool or as a log of what

you've eaten, just drag and drop any food item to the calendar. To make this process even easier, *NutriBase* lets you make a list of frequently eaten foods. You can set the program to warn you if you're exceeding any of your preset values for calories, fat, or other nutrients. If you like reinforcement, you can have the calendar display happy faces on the days in which you don't exceed your calorie or fat allotments and unhappy faces for days when you slip. There's also a "Quote of the Day" feature that greets you upon starting the program with a motivational quote; if this annoys you, it can be disabled.

NutriBase is a good tool for those who want to keep close track of their food intake and weight control. At \$69.95, it's more expensive than some other nutrition programs, but it has a much larger database of foods than the others.

For More Information:

NutriBase Personal Nutrition Manager
CyberSoft Inc.
(800) 959-4849
(602) 759-4849 ●



**In Nile:
Passage
to Egypt,
photographs
combined
with articles
give you
interesting
details about
each location
along the Nile.**

Grammar? Fun?

What's the function of a conjunction? What happens to a bill on Capitol Hill? What was the result of the shot heard around the world? These questions and more regarding grammar, science, history, and math were featured in a set of educational cartoon shorts that ABC used to sneak in between Saturday morning cartoons. Now, Creative Wonders is resurrecting the popular *Scholastic Rock* series on CD-ROM, adding fun games and animation to the classic videos for a complete educational package.

The first CD-ROM to be released is *Grammar Rock*, which breaks a sentence into its parts and delivers them with a set of

quirky characters and infectious songs. Schoolhouse Rocky leads you through the interactive scene of a small town that features some odd establishments. A student can go to the theater where "Verb" is playing, get some adverbs at Lolly's, or stop by Interjection TV. Entering each of these places opens another scene with a video to help teach kids how to recognize parts of a sentence and their relationships to each other. After the musical lesson, the student can play two games designed to test grammar skills and teach confidence with language's building blocks.

There are nine lessons in all, and the three levels of difficulty methodically teach children the



Take a walk down the street in Conjunction Junction, and you can visit several locations, each focused on a different part of a sentence, such as nouns, prepositions, etc.

basic rules of grammar. Hard work is rewarded with coins to be used in the Conjunction Junction arcade, which has games that don't have an educational objective. Parents can monitor their children's progress and gauge whether an activity is too difficult or needs to be repeated.

The educational cartoons and the accompanying games makes *Grammar Rock* an entertaining way to learn about basic grammar,

an important subject that is hard to keep amusing. This program, with a price of \$29.99, has the ability to entertain and teach a very useful skill. We give it an A+.

For More Information:

Scholastic Rock: Grammar Rock
Creative Wonders
(800) 543-9778
(415) 572-2787 ●

The Average, American PC Home

Does your family fit into the average, American PC home? According to a recent study by Packard Bell, you do if your family has one child and an average income of \$50,000. The typical family owning a computer also owned other electronics products, including one to two stereos, a CD player, three televisions, three radios, two video game systems, three to four telephones, one answering machine, and a fax machine.

Most consumers aren't limiting themselves to just one PC in the home office. More than 25% of those surveyed had more



than one PC in the house, and 14% were considering purchasing another computer within the next year. The consumers also were placing additional PCs throughout the home, in living rooms, kitchens, bedrooms, and dining rooms.

Recent studies also found that computer purchasing can be a little one-sided. A computing poll by the Gallup Organization, commissioned by Epson, found that more men owned computers than women. Of the individuals surveyed, four out of 10 men owned a PC, while only one of four women did the pur-

chasing. Men also were using the PCs more. The study found men computed about 11 hours a week, while women reported only about eight hours a week.

But that doesn't necessarily mean that women don't know as much about computers. A final study by the Electronic Industries Association's Consumer Electronic Group found that women are knowledgeable and involved in the purchase decision. They were just as aware of technologies such as E-mail (92% of women compared to 93.6% of men) and the Internet (91.1% of women and 94.4% of men), as well as processor types such as the 486 and Pentium. ●

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Tips For Windows 95: Getting Started

Windows 95 has caused more stir in the computer community than any other piece of software previously released. Fortunately, if you're using Win95 as an upgrade, you don't have to discard habits learned from previous Windows versions. Win95 is an entire operating system, or software that controls your PC, unlike Windows 3.1, which works as an interface working within an existing operating system (MS-DOS).

Win95 demands much more from your computer than Windows 3.x or DOS, so be sure you have enough memory to run it efficiently. You need at least 16 megabytes (MB) of random-access memory (RAM). Even though previous 16-bit programs (those designed for Windows 3.x) run in Win95, they'll perform differently. In some cases, applications may run faster; other applications may run slower.

■ Shortcuts

It can be a hassle to launch frequently used programs by searching through the menus accessible with the Start button. To simplify matters, create a shortcut by right-clicking (clicking once with the right mouse button) on any empty area on the Windows Desktop. This opens a pop-up menu. Select New, then choose Shortcut. Win95 then walks you through the process. When finished, your new shortcut and icon are displayed on the Win95 Desktop.

■ Using Explorer

If you're unsure where to find a program and you want to put it on the Desktop as a Shortcut, try using Windows Explorer.

1. From the Start menu, select Programs.
2. Once in the Programs menu, left-click on Windows Explorer.
3. From the Explorer window, select Tools.
4. From the Tools menu, choose Find.
5. In the Find dialog box, select the Files or Folders option to open the All Files dialog box.
6. If you know the name of the program, enter it in the Named box. Explorer understands wildcard file specifications (wildcards are the characters ? and * that let you substitute for unknown characters),

so even if you don't know the entire file name, you can enter what you know and let Explorer take over.

Explorer then will search the target drive, looking for all files matching your search criteria. After your file or folder is located, you have two options. Left-clicking on the programs icon while holding down the SHIFT key will let you drag the file to the Desktop and automatically create a shortcut. If you left-click the program's icon after it is on the Desktop, releasing the mouse button opens a pop-up menu and lets you move, copy, or create a shortcut for the program.

■ Creating Shortcut Keys

Win95 eliminated several of the hotkey combinations used in Windows 3.1. (Hotkey combinations assign longer tasks to two- or three-keystroke combinations.) With Win95, you can create your own hotkey combination to replace a mouse click. To create a shortcut key, follow the above directions for making a Shortcut. Right-click on the new shortcut icon, and select Properties from the pop-up menu.

When the Properties dialog box opens, select the Shortcut tab. Move the mouse cursor into the Shortcut key box, and select a key you want to use. The default is None, and when you select a keyboard character, the shortcut key box displays CTRL-ALT-<your key>. You can use any key plus the function keys for shortcuts. After making your selection, click on Apply, then OK. Now you can call your program from within any application with a simple combination keystroke. We found the hotkey shortcut handy for opening the calculator and calendar from other applications.

■ The Taskbar

Default settings place the Taskbar on the lower portion of your screen. This is where the Start button and the buttons for switching among running tasks are located. If you don't like it located near the bottom:

1. Left-click on a blank area and, while holding down the mouse button, move the cursor to where you want to locate the Taskbar. As you move the cursor, a rectangle should appear on the side of the screen nearest the cursor.



2. Right-click an empty area on the Taskbar.
3. From the resulting pop-up menu, select the Properties option.
4. The Taskbar Properties dialog box will open. The first two options—Always On Top and Auto Hide—pertain to the Taskbar.
5. If you always want to see the Taskbar, select the Always On Top option.
6. If you don't want to see the Taskbar when you're not using it (i.e., when you're working in another application), select the Auto Hide option.
7. To recall the Taskbar when this option is in effect, move the cursor to the side of the screen where it is located.

The Recycle Bin keeps track of deleted files. It does not, however, monitor files deleted in DOS or some applications.

■ Renaming Desktop Icons

You can rename any Desktop icon by right-clicking and selecting Rename from the pop-up menu. An alternate method is to single left-click on the icon, then left-click again. This highlights the icon text and lets you change the name of the Desktop icon.

■ Deleting Files

The Recycle Bin keeps track (up to the limit you set) of deleted files. It does not, however, monitor files deleted in DOS or some applications. If you want to keep track of all deleted files, erase them from within My Computer.

■ Adding Programs

It is important to install new applications with the Add/Remove Properties dialog box. Even though the program's installation instructions may tell you to type setup from the drive you are installing from, you should use the Add/Remove option to let Win95 keep track of new applications. To open the Add/Remove program dialog box:

1. Left-click the Start button.
2. From the resulting Start menu, select Settings.
3. From the Settings menu, choose Control Panel.
4. Once in Control Panel, double left-click the Add/Remove Programs icon.
5. In the resulting dialog box, follow the installation instructions.

■ Performance

Windows uses **virtual memory** when it requires more memory than your computer's RAM can provide. Virtual memory is stored on your

hard drive and is "swapped" in and out of RAM from there. Win95 uses "dynamic" virtual memory, meaning its memory can shrink and grow as required. This process is both efficient and messy. Because Windows can place this **swap file** anywhere on a target drive, it tends to fragment that drive more, resulting in fragmented files that can slow your system. You can set up a permanent swap file that may improve this situation. (**Fragmentation** occurs when bits of one file are scattered throughout your hard drive rather than being stored in a contiguous unit.)

To see how your swap file is set up:

1. Right-click on My Computer.
2. Select Properties from the pop-up menu.
3. From the System Properties dialog box, select the Performance tab.
4. On the Performance page, left-click the Virtual Memory button.
5. Read the warning at the top of the tab, and make sure you understand it. Adequate hard drive space will help you avoid future problems.
6. Select "Let me specify my own virtual memory settings" to activate the hard drive list and the Minimum/Maximum settings.
7. If your computer has more than one drive letter (for example, C:, D:, E:), select the drive with the most empty space.
8. Choose a minimum size based on how you use your computer. If you have multiple applications running or a graphics package, a larger swap file is needed. If your work is limited to word processing, you can use a smaller permanent swap file. To start with, try setting the minimum at 10 or 15.
9. Leave the Maximum setting at the default setting, which is "No" maximum.

If Win95 runs out of swap space, it acts strangely, and you may lose data. If you change any settings, your computer will need to be rebooted to accept the new settings.

■ Startup Diskette

A startup diskette can be a vital safety feature on your system. Start by inserting a blank high-density (3.5-inch, 1.44MB) diskette in your A: drive. (Be sure any important data is removed from this diskette because formatting will destroy all data.) Double left-click on the My Computer icon, and then left-click on the A: drive icon. Don't double left-click because the drive window will open.

From the File menu, choose Format. When the Format dialog box opens, choose Full; since the diskette must be bootable, check Copy System Files under the Other options section. You now can make your startup diskette. Go to Control Panel, open Add/Remove programs, and follow the on-screen instructions to complete the process. You probably will have to insert your Win95 CD-ROM or diskettes to complete making your startup diskette. When you are finished, label it and write-protect it by moving up the small tab in the upper corner of the diskette (away from the side of the diskette that you insert first).

Win95's rich options let you create an individualized work station. Experiment with these options to find the ones that suit your needs. ●

by Richard F. Huber

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Making The Right Toolbar For The Job

In a society where most anything can be customized to your individual needs, Windows 3.1 offers you that same flexibility with its programs. If you're confused about the benefits of customizing your toolbar, or why you would want to do it, read on.

Windows lets you customize your toolbars to make using its programs easier and more enjoyable. This operating environment lets you customize toolbars in all its Microsoft programs and File Manager. Buttons on a toolbar perform some of the most common tasks in your program, such as opening or printing files. If you use a mouse, toolbars provide instant access to a wide range of commands. In fact, you can think of your toolbar as "shortcut keys" for the mouse. This appeals to users who want to customize toolbars to suit the way they work. To customize a toolbar, you can add or remove buttons so that it contains only the commands you use most often.

■ In Word & Excel

To add or delete a button in *Microsoft Word* or *Microsoft Excel*, follow these steps:

1. Choose Customize from the Tools menu.
2. Select the Toolbars tab.
3. If you want to add a button, go to the Categories box, and select the menu where the button you want to add is located, such as File or Edit. From the box to the right of the Categories box, drag the button to the position on the toolbar where you want to add the button.
4. If you want to delete a button, drag the button off the toolbar, and place it where there is no toolbar, such as in the dialog box.

To see a button description on the Toolbar tab, rest your cursor on the button. The description appears at the bottom of the box.

To move or copy a button in Word or Excel, follow these steps:

1. From the Tools menu, choose Customize.
2. Select the Toolbars tab.
3. If you want to move a button, drag the button to the new location on the same toolbar or to another displayed toolbar.
4. If you want to copy a button, hold down the CTRL key, and drag the button to the new location on the same toolbar or to another displayed toolbar.

When you move or copy a button, the program readjusts the toolbar to accommodate the change.

You also can move or delete a button without displaying the Customize dialog box by holding down the ALT key and dragging the button either to its new location or off the screen. In addition, you can copy a button by dragging it while pressing ALT-CTRL.

You also can create a custom toolbar for a particular document or set of tasks, such as creating a toolbar for desktop publishing.

To create a custom toolbar in Word:

1. From the View menu, choose Toolbars.
2. Click New.
3. In the Toolbar Name box, type a name for the toolbar.
4. In the Make Toolbar Available To box, indicate the template where you want to store the toolbar, then click OK.
5. Choose the Toolbars tab.
6. In the Categories box, select the category that contains the buttons you want to add to the new toolbar.

(NOTE: If you're using Excel, you should skip steps 4 and 5.)

■ In File Manager

File Manager is another Windows program that lets you customize your toolbar. However, the steps here are a little different than for Word and Excel. To add a button to the File Manager toolbar, follow these steps:

1. Double-click the background of the toolbar or, from the Options menu, choose Customize Toolbar.
2. Under Available Buttons, select the button you want to add.
3. Choose the Add button.

For help while using the Customize Toolbar dialog box, choose Help or press F1.

To move a toolbar button in File Manager, hold down SHIFT while dragging the button to its new position, or use the Customize Toolbar command in the Options menu. To use the Customize Toolbar command:

1. Under Toolbar Buttons, select the button you want to move. Select Separator to add a space between buttons.
2. Choose Move Up to move the button left on the toolbar or Move Down to move the button farther right. You also can drag the buttons on the list to a new position.

To remove a toolbar button in File Manager, you either can hold down the SHIFT key while dragging the button off the toolbar or use the Customize Toolbar command in the Options menu. To use the Customize Toolbar command:

1. Under Toolbar Buttons, select the button that you want to remove.
2. Select Remove.

You may choose Reset at any time to restore the default buttons to their original positions.

Customizing toolbars is one way Windows offers you convenience and flexibility. Setting up toolbars to suit your individual needs is quick, easy, and well worth the time and effort. ●

by Angela Gay

Computer Communication

Serial Ports Let Your PC Talk To Its Peripherals



Through its use of setup Wizards, Win95 helps eliminate many of the usual pitfalls associated with setting up serial devices. When installing new or additional hardware, the appropriate setup Wizard will take you through a step-by-step process to help ensure proper installation. If two devices are placed at the same address, you are notified with an alert icon placed beside the offending serial device.

■ Looking Through Windows 95

It's easy to see your computer's configuration in Win95. Right-click the My Computer icon, then select Properties from the pop-up menu to open the System Properties dialog box. From System Properties, select the Device Manager tab. This page contains information on all hardware and system devices attached to your computer. You can view the devices by **type** or **connection**. Viewing by type displays devices listed under its hardware category. For example, click the Mouse icon; it displays the mouse category with a subcategory showing the mouse type. If you view the mouse by connection, the mouse type is displayed with the connection to the computer. Because of the way it's laid out, viewing by type is easier to understand.

Looking at the page by type, you will see the topic and ports listed. Clicking the plus (+) sign beside it opens the branch displaying the serial (COM) and parallel (LPT) ports installed on your computer (see Figure 1). As mentioned earlier, most computers have two serial ports, and these are displayed as COM1 and COM2. (Parallel ports, also known as LPT ports, accept cables that have parallel wires, letting data flow through the cable at a high speed.)

Double left-clicking the Communications Port (COM1 or COM2) icon opens the Communications Port (COM1 or COM2) Properties dialog box. This dialog box contains four tabs: General, Port Settings, Driver, and Resources. The General tab displays information about the manufacturer, hardware version, and the status of the device (whether it's working properly or not). The Device Usage display shows the available configurations. Usually you will leave the default Original Configuration checked. Removing the checkmark disables the device. You probably only want to disable the device when you are troubleshooting a problem.

The Port Settings tab lets you configure the serial port with settings specifically designed for it. Five serial port settings pertain to how they should interface with a device: bits per second, data bits, parity, stop bits, and flow control. Here's a closer look at each of these settings, what they mean, and how to set them.

Bits per second. Serial ports transmit data one bit at a time through communication channels. Each bit of data causes frequency-shift keying

The serial or communications port (COM port) located on the back of your PC is one of your computer's gateways to the outside world. The COM port lets your computer "talk," or interface, with peripherals such as a mouse or modem. The PC can recognize up to four serial ports while the typical computer contains only two, designated as COM1 and COM2. The serial port is sometimes called the RS-232 because it uses the RS-232C standard of the Electronics Industry Association (EIA).

Like every component dealing with your computer's hardware, serial port information resides at specific memory addresses and **interrupt requests (IRQs)**. (An IRQ is a request-for-attention signal that can be passed by either hardware or software to a computer's microprocessor.) Only one device can reside at a single interrupt and address, and trying to put two devices at the same address is a common problem when you're adding new equipment or interface cards. When you do this, one serial device won't work.

In versions of Windows before Windows 95, the user had to determine serial port settings when installing a device, making it easy to set up two devices using the same COM port. Win95 removes some of that burden with its ability to recognize and self-install many of the more popular modems and mice.

(FSK), which is a simple form of modulation in which the digital values 0 and 1 are represented by two different frequencies. One FSK change equals one second, or one baud. (A piece of trivia: The term "baud" was named after the French telegraphy expert J.M.E. Baudot.) The term **bits per second (bps)** also describes transmission speed. As baud or bps rates increase, so does the speed of the transmitted data. Currently, popular bps speeds for modems are 14,400bps and 28,800bps, but there still are plenty of 9600bps modems in use. If you don't know the speed of your modem, start at the default setting and increase or decrease the value from there. (NOTE: The bits per second list doesn't show either 14,400bps or 28,800bps; the closest match is 19,200 and 38,400. Use the setting closest to your modem's actual baud rate [if you know it]. For example, use the 19,200 setting for a 14,400bps modem. Don't worry about the discrepancy because the transfer rate is limited to your hardware's maximum speed.)

Data bits. For convenience, data are broken into small chunks roughly corresponding to one byte. Each chunk of data is called a word and can consist of four to eight data bits. The typical setting for data bits is either seven or eight. The standard ASCII character set is made up of seven bits, while the extended ASCII character set requires eight. If your computer is set to receive only seven bits and the information contains eight bits, the message will be garbled. Using the default setting of eight data bits assures you of the widest possible compatibility.

Parity. To ensure the integrity of transmitted and received data, a parity bit can be added for security. This integrity bit is added between the first and last bit of the word to count the number of bits and determine if the number is even or odd. Parity bits used in serial communications are Even, Odd, None, Mark, and Space. A parity of Even switches on the parity bit when the total bit count is even. Odd parity switches the parity bit when the bit count is odd. When None or No Parity is selected, it doesn't leave space for a parity bit. The Mark parity bit is always on regardless of a word's total bit count. Space parity always leaves the parity bit off.

Most communication services use No or None as parity. If you incorrectly set the Parity bit, your modem will not communicate properly.

Stop bits. To determine where a word starts and ends, a start bit and a stop bit are inserted to mark the beginning and end of a word. In most transmissions, the stop bit has a value of one but might contain two.

Flow control. Transmitting or receiving data to a "deaf" computer is like trying to have a conversation with a busy signal or a ringing phone,



Figure 1: In Windows 95, you can view all hardware and system devices attached to your computer. Here the serial (COM) and parallel (LPT) ports installed on your computer are displayed.

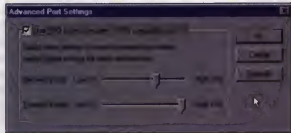


Figure 2: Selecting the Advanced button from the Communications Port tab opens the Advanced Port Settings dialog box.

hoping someone will take your message. Even though the connection is good, your data is cast into the netherworld of bits. Flow control offers a way for the sender to tell the receiver to hold on and wait for incoming data. Inversely, the receiver must be able to signal the sender to hold on until ready to acquire the data. This back-and-forth agreement in conversation is called **handshaking**.

Hardware and Xon/Xoff are the methods used to make handshaking happen. In Hardware flow control, a special wire acts as a signal line to indicate the receiving system's readiness to accept data. Since this system uses extra hardware (the flow control wire), it's called **hardware handshaking**. This system is usually specific to local peripherals, and you should check documentation before changing the default setting.

Sometimes it's not possible to have this extra signal wire. The alternative to hardware handshaking is to use **software handshaking**. Xon/Xoff is the default setting and is a software handshaking method using the ASCII characters 19(hex) XOFF and 17(hex) XON. The Xoff character is sent over the wire if the receiver wants to temporarily halt transmission, while the Xon character is sent to continue with the transmission. Xon/Xoff is a widely accepted method of connecting serial port hardware to your computer.

■ High Performance Serial Ports

Your serial port contains a special chip called a Universal Asynchronous Receiver (UART) that transforms the signals inside your computer to serial impulses. Many new computers come equipped with a high-end version of this chip called a 16550 UART. (NOTE: You can easily check to see if your serial port contains this chip by using the Microsoft Diagnostic (MSD) program furnished with Win95. At the DOS prompt, type `msd`, select the Com Ports button, and check the line UART Chip Used. MSD will display the number 16550 under the COM1 or COM2 column if the chip is installed.)

Selecting the Advanced button from the Communications Port tab opens the Advanced Port Settings dialog box (see Figure 2). The 16550 UART chip allows what is called first in first out (FIFO) processing. This enhances transfer rate by buffering the transmit/receive signal.

This subject is complex, but Win95 makes installing and using serial-based hardware far more fool-proof than before. With the open architecture of configurations, you can fine-tune your PC's system for peak performance. ●

by Richard F. Huber

Basic Training

Regardless of the operating system you choose, there are a few elementary functions you should understand. This monthly section is your one-stop guide to learning these crucial first steps in DOS, OS/2 Warp, Windows 3.1, and Windows 95. Use it to learn your operating system and see whether others offer a smarter way to work.

HOW TO PRINT FILES



Most work we do on computers with word processors, spreadsheets, or databases culminates in a paper printout. Printing is one of the most basic tasks in the PC toolbox.

Inside a program, the print command is usually located under the File menu at the top of the screen. However, it's not always necessary to have a program open to print a file. If you know exactly which file you want to print and you're sure it is set up the way you need it, you can print it without going through the often tedious step of loading the program and opening the file.

■ DOS

To perform this bit of magic in DOS, type **print** followed by the path and file name of the file. Then press ENTER. For example, if you wanted to print a copy of your *Config.sys* file, you would type:

```
print c:\config.sys
```

This command includes several optional switches. You can find out more about them by typing **c:\dos\help print** from any DOS prompt. Most switches are not very interesting. You might need to specify exactly which device you want to print to by including the **/D** switch.

You can include multiple files on one print command line. The command

```
print c:\config.sys c:\autoexec.bat c:\windows\win.ini
c:\windows\system.ini
```

will print all four of the files mentioned. DOS keeps a print queue listing each file and prints it in turn. You can see what is on the queue by typing **print** and hitting ENTER. Typing **print /t** removes all files from the queue.

■ OS/2 Warp

OS/2 Warp lets you print any file by dragging its icon over the icon of a printer. Just hold the mouse button down while over the file icon, then drag it to the printer and release. A print dialog box will appear. If you don't have a printer icon, one can be created by pulling a printer file out of the Templates folder.

A simpler method is to click the right mouse button while the cursor is pointing at a file icon. A small menu pops up. Choose the Print option.

■ Windows 3.1

In Windows, you can print any file using File Manager, which is found in the Main program group. After double-clicking the File Manager icon, use the program to find the file you want to print. For example, try to print the *Win.ini* file inside the *C:\WINDOWS* directory. First, click the *C:* drive icon at the top of the screen. The window below now displays the folders of the *C:* drive. Scroll down to the *WINDOWS* directory, and click once. That directory's files appear on the right side of the window. Use your arrow keys to scroll to the *Win.ini* file. Highlight it by clicking once on the file name.

Next, choose the Print command from the File menu at the top of File Manager. The Print dialog box appears, displaying the *Win.ini* file name. Click OK to add the file to the print queue. File Manager can print any file that is associated with a program. If the file isn't associated with a program, an error message will appear with further instructions.

You also can print in Windows by dragging a file from File Manager to the Print Manager icon, which usually is located in the Main program group. If Print Manager is running, a minimized icon will be sitting at the bottom of the screen. Hold the left mouse button while the pointer is over a file in File Manager, then move the pointer to the Print Manager, and release the button.

■ Windows 95

Win95 can easily print documents by clicking the right mouse button while the pointer is over a file icon in Explorer or any other file window such as a hard drive in My Computer. A small menu appears. Select the Print option, and the file will be loaded and printed automatically.

You also can use the mouse to drag a file over a printer icon. Installed printers have icons in the printers folder inside My Computer. You can create a shortcut to a printer and place it on the Desktop for easy access whenever a file must be printed.

ADDING A PROGRAM GROUP/MENU FOLDER



Program groups in Windows 3.1, Start Menu folders in Win95, and folders in OS/2 Warp let you easily categorize program icons. The icon groupings allow fast access to programs. Many users don't realize these groupings can be reorganized to work more efficiently.

DOS can't display programs this way unless you use an add-on menu system.

■ OS/2 Warp

OS/2 Warp folders can be created by opening the Templates folder and dragging out a new folder icon. Hold down the right mouse button while the pointer is over the folder template. Then drag it to the desktop or to another folder, and release the button. A new folder is created that can be filled with programs or shadows. (See the section Adding A Program Item/Shortcut at right).

■ Windows 3.1

In Windows, Program Groups are depositories for Program Items. The Program Items in a group usually are associated with one another. They might all relate to the same program or perhaps a certain person. Existing Program Groups can't be renamed, but they can be created and deleted.

To create a Program Group, go to Program Manager's File menu, and select New. A dialog box displays a choice between Program Group and Program Item. Click in the circle next to Program Group, and click OK. Next, type in a name for the new group. Click OK, and a blank window appears with the name you specified. This is a new Program Group. If you minimize it, it will take its place with the rest of the Groups. Program Items can be dragged in from other Groups, or new Items can be created. (See the section Adding A Program Item/Shortcut at right).

■ Windows 95

Win95's version of Program Groups are the folders inside the Start menu. A vast improvement over the old system, Start Menu folders can be renamed and nested inside one another for greater flexibility.

To create a folder, press the Start button, and choose Settings, then Taskbar. Left-click the Start Menu Programs tab, then the button labeled Advanced. An Explorer window appears with the contents of the entire Start menu. The contents of the folder highlighted on the left side are displayed on the right side. Open the folder where you want the new folder located by double left-clicking it. Then move the mouse pointer to the right window, and press the right mouse button. A small menu appears. Choose New, then Folder. A new folder pops up with a blinking cursor in its name. Type the name you want, and press ENTER. A folder is born.

Folders created this way in the Start Menu folder can be found in the Start Menu that appears when you press the Start button. If you put your folder in the Programs folder, the new folder will appear in the cascading menu that appears when you choose Programs from the Start Menu. Any folders you don't like can be dragged to the Recycle Bin.

ADDING A PROGRAM ITEM/SHORTCUT



Program Items or Shortcuts can quickly access programs or files. These special icons aren't the files themselves; they point to a file or program at another location inside the computer. Shortcuts can be arranged to suit individual users. In each example, we'll create an icon that launches a To Do list created in a simple text program such as Notepad.

■ OS/2 Warp

Shadows are OS/2 Warp's name for these representative icons. If you have a To Do list saved in a folder somewhere, you can make a shadow for it to place it on the desktop or in the Launchpad. First, find the file and click on it with the right mouse button. A small menu appears. Choose Create Shadow. A dialog box pops up asking for the location of the shadow. Click the Create button, which makes the shadow appear next to the original file. Notice that shadows have blue titles rather than black.

Now, you can put the shadow wherever you like. Just drag it using the right mouse button. You even could put it directly on the Launchpad by dragging it there.

■ Windows 3.1

Windows Program Items are found in Program Manager's Program Groups. To create a new Item, open File Manager. In the window's right side, find the folder containing the file. Click on the folder to display its contents on the left side. Find the file, then drag it to a Program Group. An icon appears in the Program Group. Double-clicking that icon will launch the file.

Another method is to select New from Program Manager's File menu. Then select Program Item. Type a name for the icon in the Description line. Enter a command line, or click the Browse button to find the file. Then click OK. A new Item will be created in the active Program Group.

■ Windows 95

To create a Win95 Start Menu Shortcut to any file, click the Start button, choose Settings, then Taskbar. Select the Start Menu Programs tab, and left-click the Add button. The Create Shortcut box appears to let you enter a command line or browse for a particular file. If you select browse, you can search for a program on a drive. Double left-click a file, then hit Next. Select a folder for the shortcut to occupy, type a name for the shortcut, and press Finish.

Shortcuts also can be created in any folder or on the Desktop. Just press the right mouse button and choose New, then Shortcut. The same Create Shortcut box appears that we saw in the Start Menu options. ●

by Alan Phelps

Boost Windows 95 With PowerToys

What do members of the Windows 95 Shell Development team do at night?

They program. What did you expect?

Instead of getting a life, Win95 programmers spend their free time concocting little applications that add new features to Win95. Technically, these mini-programs are called UI enhancements (the UI stands for *user interface*). It's easier, however, to use the non-technical name the programmers use: PowerToys.

Don't assume these Toys are games. PowerToys merge with Win95 to add a new layer of convenience and functionality. For example, do you hate rebooting Win95 because you need a certain color setting for a game? Have you ever wished you could see what's in a folder without opening it? PowerToys can come to the rescue.

In addition to being little problem-solvers, the PowerToys are also absolutely free. You can add-on, update, or upgrade without opening your checkbook.

There are a couple of catches, of course. The first speed bump is that the only way to grab your free copy of PowerToys is via modem (see sidebar). The second hitch is that even though the PowerToys were created by Microsoft for Win95, they are not officially part of the Win95 retail product. Translation: Don't call Microsoft if you have questions.

Currently there are 10 PowerToy applets. There is an additional, lost PowerToy, but we'll discuss that later. Before installing a PowerToy using the how-to instructions at the end of this article, take a moment to read the following summaries and do a mental test-drive on the Toys to see what each can do for your system. Prepare to discover solutions you didn't know existed for Win95 deficiencies.

■ CabView

If you peruse the Win95 CD-ROM through Explorer, or virtually any original Microsoft program diskette, you will see a list of file after mega-file with names ending in .CAB, which stands for *cabinet*, as in file cabinet. Welcome to Microsoft's file compression scheme.

Normally, how Microsoft compresses and ships its files would be none of your concern. The application's installation process extracts

side and scroll through the list of files. After locating the needed file, drag it to a new location. Win95 extracts and decompresses the file automatically. It's as simple as C-A-B.

■ CD AutoPlay Extender

One of the oft-touted Win95 improvements is AutoPlay, Win95's look-Ma-no-hands ability to automatically run a CD-ROM after it has been shoved into the drive. It's a great feature that works just great if all your CD-ROMs happen to be Win95-aware. Most of them, of course, are not. The CD AutoPlay Extender PowerToy will make any non-audio CD-ROM almost AutoPlay.

Once this toy is installed, an AutoPlay Extender icon is added to the Start menu. After restarting Win95, the next time you insert an old-fashioned CD-ROM, Win95 detects its presence and displays a dialog box. The AutoPlay Extender dialog box tells you the name of the inserted disc and asks if you want to run the program on it. Additionally, the dialog box can Open, Explore, Run a shortcut or program, Run Setup, and Add/Remove programs. This means no more of that messy Start/Run business.

■ Contents Menu

You see a folder. Even though it has a long file name, you still don't have a clue what's in it. Or perhaps you know what's supposed to be in it and want to double-check. Fortunately you've prepared by installing the Contents Menu PowerToy. Confidently you right-click the mystery folder. The shortcut menu appears with a new option called Contents. Highlighting Contents reveals a list that displays what's in that folder.

■ Explore From Here

You can tell these PowerToys were named by programmers. Who else could possibly come up with a snappy name like Explore From Here? Regardless of its name, Explore From Here is a handy shortcut. Once in-

and decompresses required files for you. You may not even know the files are compressed. Eventually the day comes, however, that you need a new copy of a file or driver that's nestled deep within a .CAB file. But, how do you know which CAB file contains that sought-after driver, and then how do you get it out? You certainly don't want to reinstall the whole program.

That's where CabView comes in. After installing this Toy, Win95 will treat a .CAB file as if it were a folder. You'll be able to peek in-



stalled, Explore From Here appears in the shortcut menu whenever you right-click on an Explorable item such as a folder or drive.

Normally, Explorer provides access to all drives on the system. This is great when that's what you need. Explore From Here uses the current location on the system as the root, and the Explorer window focuses only on the included files and folders.

Here's how this works: Say you're in a File, Open dialog box in the \MSOFFICE\WINWORD directory. If you right-click and chose Explore From Here, you'll see a list of files in \MSOFFICE\WINWORD and all files and folders below that position. You won't see what's in \MSOFFICE or in the A: drive or D: drive, for example. Explore From Here is a "you are here" command.

This timesaver is especially helpful on a network where Explorer may be putting you on information overload.

■ FlexiCD

FlexiCD also inserts itself in the Start menu and waits in the Taskbar until summoned for duty. FlexiCD works with audio CDs. So if you don't plan to play Hootie and the Blowfish from your computer, pass on this option. If you're the DJ of your PC, however, you'll love FlexiCD. When an audio CD is inserted, Win95 senses it, and the FlexiCD icon becomes active. You now have total control over your sounds. With the mouse you can Play, Stop, Pause/Resume, select which track you wish to hear, adjust the volume, and eject the disc.

■ QuickRes

Installing this PowerToy will, again, place a command in the Start menu and an icon on the Taskbar near the clock. QuickRes' purpose is to provide a simple way to switch between color and resolution modes without getting technical and without rebooting.

While most programs are happy to run in a very high resolution mode, many CD-ROMs refuse to play unless the color and resolution mode match their abilities. Just right-click the QuickRes icon, and select the desired resolution—640 x 480 with 256 colors, for example—from the shortcut list that appears. The desktop will go black for a moment, then reappear in the selected mode. When you're done with the game, readjust QuickRes back to your 64K colors, and get back to work.

■ Round Clock

The Round Clock program falls in the "Why do we need this?" category. Unlike the other Toys, an installation program isn't provided. Use the Explorer to visit the Power folder and double-click on the Clock.exe file, and a clock will appear on your screen. To make the clock appear as a circle, double right-click on the clock's face. Minimize it, and the clock takes a seat on your Taskbar. There are additional settings that can be adjusted, such as the font.

■ Shortcut Target Menu

One of the timesavers in Win95 is the ability to point at any object, right-click, and Copy, Delete, Rename, and so forth. Logically, making changes on a shortcut affects the shortcut only. The program the shortcut points to—called the Target—is unaffected by changes made to the shortcut.

Sometimes, though, you do want to perform some right-click actions on the Target program. The only way to do that would be to journey to the Target program itself, and take care of business. That trip isn't necessary if you've installed the Shortcut Target Menu Toy, which adds the word Target to the right-click menu.

With the addition of Target, you now can right-click a lowly shortcut and then use the Target command to carry out actions—including Delete—on the original program.

Clearly this is dangerous if it falls into the wrong hands, so take care.

■ XMouse

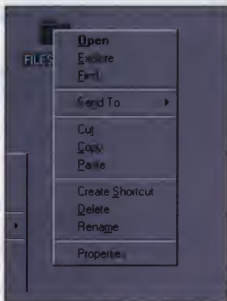
This PowerToy changes the abilities of the mouse so that whatever it points to is automatically the active item. You still must click on a window to make it appear, but with XMouse installed, merely pointing to a title bar turns it on. If you are familiar with X Windows, you'll like this feature, which emulates X Windows. If you're unfamiliar with X Windows, you'll want to pass.

■ Send To Any Folder

This is the lost Toy. This handy feature appeared in the first PowerToys collections, but it isn't available in the most current version. Since you can still find this Toy online, however, and since Microsoft may realize the error of its ways and add it back in, we've included it here.

This Toy adds a Send to Any Folder option to the Send To right-click shortcut menu. Normally you can right-click an object and send it to a printer, a program, even a drive—anyplace but somewhere else on the current disk.

With Send to Any Folder installed, that choice is provided. You even can Browse through the system for the target Folder. Once you've selected a destination, the object is moved or copied.



On the left, the basic Shortcut menu. On the right, an Enhanced menu.



■ Tweak UI

Tweak UI—the most recent addition to this rapidly-expanding toy chest—lets you change the way Win95 works. After installation, you'll find this incredible little item by going to the Start button, selecting Settings, and moving into Control Panel. Then, double-click on the Tweak UI icon to activate. Through a series of check boxes and tabs, you'll be able to change items such as how quickly the cascading menus appear, whether to save settings when you exit, what a shortcut looks like, and how to get rid of the Inbox and MSN icons from your desktop. Plus, a whole lot more.

■ Installing a PowerToy

The most difficult part of installing the PowerToys is the stuff you must do before you can give the actual install command. That's what Steps 1 through 4 cover.

1. Download PowerToy.exe using the instructions in the sidebar.
2. To make a home for the PowerToys, start by activating the Explorer and selecting File, New, Folder. Your cursor winds up sitting on the words "New Folder." Type **power** and press ENTER.

NOTE: Don't get fancy and name the folder anything longer than eight letters. The installation portion of PowerToys can't handle long file names. Stick with the short names, or the Toys won't install.

3. Copy PowerToy.exe into the Power folder.
*NOTE: If you downloaded PowerToy.exe but don't know where it landed on your hard drive, use Start, Find, Files or Folders, type **powertoy.exe** in the Named text box, and click Find Now. Once the file is found, make note of its location, then use Explorer to move it to the Power folder.*

4. While you're in the Explorer and pointed at the Power folder, double-click on PowerToy.exe. This will open a small DOS window, and Win95 will extract all the Toys from inside the folder. The window will put itself away when finished. At this point, you have performed all of the most difficult tasks in this project. You're virtually home-free.

5. Each PowerToy has its own Setup Information (.INF) file. While in Explorer, in the Power folder, point to the .INF file for the Toy to be installed, and right-click.

6. When the shortcut menu appears, select Install. That's all you have to do.

NOTE: If you are prompted for the location of a file, that's a hint that you've put your PowerToys in a folder with a long file name. Press the ESC button to exit the install process, and give the folder

Opening The Toy Chest

The PowerToys are all contained (and compressed) in a single file called PowerToy.exe. That's good news. Why? Because when a file name ends in .EXE—rather than .ZIP—you know that your post-downloading experience won't include a traumatic wrestling match with PKUNZIP to extract the contents. The bottom line is that this will be easy.

CompuServe

Using WinCim to get online:

1. Go **winnews**
2. Select Library/Browse.
3. Double-click on Free Software library.
4. You'll see PowerToys included in the file descriptions.

America Online

1. Once online, use the keyword **win95**.
2. After arriving in the Win95 area, click on Software Library.
3. In the library, open Hot! Top Win95 Files.
4. Double-click on Microsoft Free Software
5. At the Window, click on Go.
6. From the list, click on Power Toys.
7. When asked if you want to set up an application, click No. You'll then see a normal download screen.

World Wide Web

To go directly to the PowerToys Web page, type this URL: http://www.microsoft.com/windows/software/power_toy.htm

a name with eight or fewer characters. Or move the PowerToys to one that does.

Steps 5 and 6 are all that's necessary to install each PowerToy. Simply find the correct .INF file in the Power folder, then right-click and Install.

Most PowerToys don't have an immediate visible impact on Win95. However, you'll find the additional PowerToy tools appearing when you need them.

■ Uninstalling a PowerToy

It can happen. That feature that seemed so cool now irritates you or conflicts with another application. The formula for expelling a PowerToy, or any other program, from Win95 is simple.

1. From the Start menu select Settings, Control Panel, Add/Remove Programs.

Following are instructions for locating PowerToys on most of the popular online services, including the World Wide Web. In the main article, you'll discover what to do once you have PowerToy.exe on your computer.

Internet—via FTP

If you don't have Web access, there's always FTP. The FTP address is: [ftp.microsoft.com/PerOpSys/Win_News/FreeSoftware](ftp.microsoft.com/PerOpSys/Win_News/FreeSoftware). Anonymous logins are allowed.

In the list of files (there are only a dozen or so), you'll find PowerToy.exe.

Microsoft Network

1. From MSN Central, select Edit, Go To, Other Locations (or right-click on the MSN icon in Taskbar and select Go to).
2. In the Go To Service dialog box, type **windows** and click OK.
3. Once you're in the Windows window, double-click the Free Software folder.
4. In the Free Software window, click Windows 95 Free Software
5. One of the files in the folder is labeled, "Win95 PowerToys." Double-click to download.

2. Once you're in the Add/Remove Programs dialog box, click the Install/Remove tab.
3. Scroll through the list of installed programs until you find the PowerToy you want to banish, and double-click on it.
4. You'll be asked if you're sure you want to remove the program; click on Yes. Win95 then will automatically remove the program.
5. When you've completed your mission, close the Add/Remove Programs dialog box by clicking OK.

■ Watch This Space

The PowerToys are being updated and enhanced even as we speak. Revisit the download site every couple of months to see if anything new has been added to the toy chest. ●

by Beth Slick

STOP CHEATING

yourself out of legitimate,
money-saving tax deductions!

You may be a tax cheat and not even know it! Cheating *yourself* out of hundreds of dollars because of missed deductions.

That's why you need TurboTax, America's #1-selling tax software! The easiest way to do your taxes. Now easier and better than ever! TurboTax features the exclusive Deduction Finder that combs your return looking for legal deductions you may have missed. And our Tax Advisor gives you help and advice, from start to finish, right when you need it.

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what's
Wrong
with...

WordPerfect

No program is perfect; most computer users accept that as a fact of life.

Programs contain bugs (flaws in the program that cause it to work incorrectly) and design flaws (things that work exactly as they were designed to but are inconvenient for users nonetheless). With this article, we continue a series that will look at major software packages, identify some of the bugs and design flaws in them, and help you work around the problems when possible. Of course, we can't cover all of the problems with a large program in just a few pages, so we'll be focusing on those we've encountered ourselves or heard about from readers or other users of the product.

In last month's issue of *PC Novice*, we covered a few of the bugs and design flaws in *Microsoft Word for Windows*. We mentioned in that article that Word 6.0, while problem-laden, is still a very popular word processor. Part of the reason for this acceptance of a product with so many flaws is that Word isn't the only program with so many bugs and design flaws. Another top word processing package, Novell's *WordPerfect 6.0*, also has a significant bug problem. With subsequent releases 6.0a, 6.0b, 6.1, and 6.2, Novell has attempted to improve upon 6.0, but those versions, too, have flaws.

■ The List Of Problems

In the following paragraphs, we'll take a look at some of the bugs and flaws in WordPerfect.

Importing files from Microsoft Word. Ida Swearingen of Minneapolis, Minn., consistently received a "divide/overflow" message when she attempted to import files to WordPerfect 6.0a from Word for Windows. When she called WordPerfect technical support, they confirmed that it was a program error (a bug), not something wrong with what

program locked up, forcing her to reboot (or restart) her system. She can change the font size or formatting as she types, but she can't go back and make changes in previously typed text.

She, like Swearingen, called the WordPerfect support line, but she was told that it must be a problem with her computer, not the

software, and received no solution. Robison doubts that the problem is with her system because she hasn't had this problem with earlier versions of WordPerfect for DOS or with the current version of WordPerfect for Windows.

Envelope formatting. Arline Sachs of Springfield, Va., discovered that WordPerfect 6.0 would not let her put the return address on an envelope all the way in the upper left corner.

The automatic addressing feature in WordPerfect transfers the address from the heading of a letter to the envelope, but it brings it in about a half-inch from each side instead of the standard eighth-inch she would prefer.

While this isn't a major inconvenience, Sachs says that the return address doesn't look right that far from the edge. WordPerfect 5.1 let her create a macro that placed the address where she wanted it, but 6.0 doesn't give her that option. Though this is a minor design flaw, it's frustrating for users to lose a feature



she was doing. They sent her a free copy of version 6.0b, in which the bug had been eliminated.

Printer settings. Swearingen also had trouble accessing the list of printer names in version 6.0a. WordPerfect support personnel were able to tell her how to go into the original setup and access them until she received the copy of 6.0b, which fixed this problem, too.

Format changes. Sandra Robison of Berkeley, Calif., using WordPerfect 6.2 for DOS, found that if she tried changing the format or font size after she had typed text, the

they like when they upgrade to a newer version of a familiar program.

Address files. Nancy Degraffenreid, a medical transcriptionist from Mt. Vernon, Wash., found another problem with addresses. WordPerfect for Windows 6.0a only let her have 70 names in an address file. She also was unable to create a second file for additional addresses. When she called technical support, she was told that the file should hold all the addresses she needs, but she still can't get it to hold more than 70. This implies that it's a bug, rather than a design flaw, because the company apparently didn't intend the file to be limited to a certain number of addresses.

While this bug might not be a problem for many people, Degraffenreid says she needs to be able to maintain an address list of the doctors she works with. Because of this problem, if she wants to add the address of another doctor to her list, she must remove an existing one. For anyone who maintains a list of clients, this causes a serious problem; having to sacrifice old contact listings to create new ones makes it necessary to print out the list or save it to a diskette. It would be much more convenient if users could create multiple files or have larger address files.

Saving enlarged documents. Degraffenreid also was frustrated by the fact that WordPerfect won't save an enlarged document. Because of a slight vision impairment, she prefers to view documents at 200% of their normal size. She can do that fairly easily, but she's unable to save a document in the new, enlarged format. This means that she must enlarge the document every time she pulls it up, which is a frustration because speed is important in her job.

Grammar checker. John Muori of Ashburn, Va., found that WordPerfect 6.1 sometimes froze up when he used the grammar checker, making him reboot his system. We were unable to contact him for more details about the circumstances in which he encountered this problem. However, we found when we researched this bug that the problem may be a conflict with *Quattro Pro* for Windows if it was installed after WordPerfect.

Resource demands. Janice Wiegarter of Bayville, N.J., complains that WordPerfect 6.1 "... is a resource hog." Frustrated with re-booting to regain resources, she said she wished Novell would design products so that features such as drawing would require fewer resources. She pointed out that if you bring a

graphic into a document and then use tools to change it, you quickly run out of resources and are forced to reboot. In essence, this forces you to do a few changes, reboot, do a few more, reboot again, and so on—certainly not a very efficient process.

Using special characters. Sachs noted another inconvenience with WordPerfect 6.1. With 5.1, she was able to write in Hebrew by creating a separate directory and using ALT-A for the first character, ALT-B for the second, and so on. WordPerfect 6.1 uses ALT key combinations, meaning she can no longer use them for her Hebrew characters. Instead, she can insert one character at a time by opening a menu and selecting the character she wants. This is less convenient than the method she was used to.

Vocabulary changes. D'Vet Pittman of Warren, Mich., commented that she has been puzzled by the changes in terminology from one version of WordPerfect to another. She gave several examples; one version "opens" files while another "retrieves" them; one version lets you perform "layout" while another calls it "format," and so on. While saying that you usually can figure out easily what the words mean, she questioned why the changes were made. She specifically mentioned that it took her a moment to realize while searching for the Format command that it now was called Layout.

Buried functions. Pittman also was frustrated by having to search for simple, frequently used commands in menus. Some of the commands she thought should be more easily found were centering and right and left indentations. They were easier to find in previous versions, she says.

Deleting files. A difference between WordPerfect for DOS and WordPerfect for Windows that annoyed Pittman was that in the Windows version, you must leave the program

and go to the Windows File Manager to delete a file. Pittman, who was used to the DOS version, which allows deletion from within the program, found the Windows way to be inconvenient. That's a common complaint about word processors; Word for Windows also re-

quires you to use the File Manager to delete files.

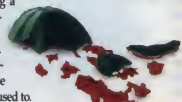
For additional information about WordPerfect, you can access *WordPerfect Magazine Online* in America Online's Newsstand area. This area has message boards where you can exchange tips with *WordPerfect Magazine Online's* staff members and other WordPerfect users. There also is a forum for WordPerfect users on CompuServe (Go: wpuser).

You also can visit BugNet Online, a World Wide Web page dedicated to software bugs at <http://www.bugnet.com/~bugnet>. (This site covers bugs on several programs, not just WordPerfect.) BugNet Online reports bugs and fixes for these programs, and you can report bugs to them. When we checked BugNet Online for problems with WordPerfect, we found a long list of bugs, many of which cause GPFs. (A General Protection Fault is Windows' way of warning you that a program has tried to access a portion of RAM that's protected from an unauthorized intrusion. GPFs usually force you to restart your system and lose any unsaved data.)

None of the readers who wrote in about problems had experienced these particular bugs, perhaps because many of these bugs were so obscure that most users don't encounter them. Should you encounter a bug with WordPerfect or another program, BugNet Online is a good place to look for a solution when technical support is unable to solve the problem or if you don't want to wait on hold. ●

by Diana K. McLean

**BugNet Online
is a good place
to look for a solution
when technical
support is unable to
solve the problem or
if you don't want
to wait on hold.**



Diskettes: Your Portable Data Suitcase

The success of a technology product can be measured by how easy it is to find in its industry. If product use is widespread and users take it for granted, the product succeeds. The story of the computer diskette—often called a “floppy disk”—shows how a product’s popularity can revolutionize an industry.

The first diskettes—which are portable memory storage devices that are inserted into a drive in your computer—were 8-inch behemoths that had little memory capacity compared to the current 3.5-inch diskette enclosed in a hard-plastic case. Technology advances led to the introduction of a 5.25-inch diskette in 1976, which had only 160 kilobytes (KB) of memory. (A current 5.25-inch diskette has 1.2 megabytes (MB) of memory.) Although 5.25-inch diskettes are losing out to the more compact and widely used 3.5-inch diskettes, they led us on the road to smaller computers and still are a viable way to store data from your computer. (A byte is a unit of measurement equal to eight bits. Storage capacities are measured in either kilobytes, about 1,000 bytes, or megabytes, about 1 million bytes.)

The term “floppy disk” aptly describes the flat, flexible diskette covered by a protective case (on 3.5-inch diskettes) or jacket (on 5.25-inch diskettes.) Each diskette is stamped, cookie-cutter fashion, from a magnetic medium similar to recording tape. Unlike recording tape, however, both sides of the diskette medium are coated with magnetic material. Manufacturers use different “secret recipes” to produce magnetic coatings.

■ ‘Floppy’ Facts

The grain density of the magnetic medium and the number of sides on which the diskette can store information determine how much data a diskette can hold. The early, 8-inch diskettes had a capacity of 1MB, while 5.25-inch diskettes held just 160KB. A two-part naming system was developed to help separate and describe diskettes’ capacity and

number of read/write sides. Single-sided diskettes store information on one side of the diskette; double-sided diskettes use both. All 3.5-inch diskettes (which can store either 720KB or 1.44MB of memory) are double-sided. The second part of the naming system describes their magnetic density: single density, double density, and high density. Single density diskettes are no longer used, and double-density diskettes are used mainly by manufacturers for software product distribution. High-density diskettes are today’s portable memory storage device of choice.

Using the naming system, here’s how diskettes are described.

5.25-inch diskette:

- DSDD—double-sided double density, 360KB capacity
- DSHD—double-sided high density, 1.2 MB capacity

The DSDD diskette has a central hub ring, while the DSHD does not.

3.5-inch diskette:

- DSDD—double-sided double density, 720KB capacity
- DSHD—double-sided high density, 1.44MB capacity

Some manufacturers’ diskettes vary from this naming scheme. For example, a DSHD diskette can be labeled MF2HD. On this diskette, the DSHD case has a hole in its upper-left section, which is designed to increase its density. The DSDD diskette does not contain this additional hole.

■ Write Protection

Have you ever overwritten important data on a diskette? If so, you’re not alone. This happens to nearly every PC user. A write-protect tab in the lower-left corner of a 3.5-inch diskette covers a hole that prevents you from writing to or formatting the diskette. Sliding the tab reveals the hole. Many software manufacturers produce diskettes without the tab, which protects the diskette from having its data overwritten.

■ Diskette Drives

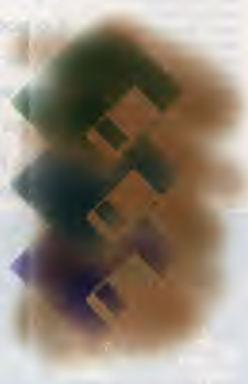
Compared to other computer components, your computer’s diskette drive is a simple device. The drive contains a spindle motor for spinning the diskette, a stepper-motor for positioning the drive’s read/write heads, and an assembly called the head actuator.

As the diskette spins, electrical signals supplied by the disk controller card tell the heads which disk track to move to. Disk drive electronics send the appropriate number of impulses to the stepper motor to move the head to the target track.

All new computers usually are equipped with a 3.5-inch, high-density drive. Drives are backward-compatible, but not forward-compatible. This means that a high-density drive can read a double-density diskette, but a double-density drive cannot read a high-density diskette.

■ Density Holes

For about \$30, you can buy a kit to punch a high-density hole in a standard 720KB



double-density diskette. Your PC reads the diskette with this "fake" high density hole as a 1.44MB high-density diskette. Proponents of punching holes into diskettes say this works because there is no difference in the magnetic medium and 720KB disks are less expensive.

In our experience, the benefit of "doubling" double-density diskettes is iffy. The no-difference-in-medium argument for 5.25-inch diskettes may be true, but that's not necessarily so for 3.5-inch diskettes. This makes disk capacity doubling like playing Russian roulette with your data. These diskettes might work 90% of the time, but a 10% failure rate isn't acceptable.

The street price of a 3.5-inch, high-density diskette is about 25 cents, while its 720KB counterpart costs about 20 cents. Saving a nickel on a double-density diskette isn't worth the effort involved and the risk of losing data.

■ Diskette Architecture

A diskette can be compared to a phonograph record. But unlike an LP, the mechanism that reads data stored on a diskette doesn't spiral inward as a program progresses. Also, a diskette doesn't have to be turned over to read the second side since read/write heads are located on both sides of the diskette.

A diskette must be prepared in a procedure called **formatting** by the operating system before it can receive data. When a diskette is formatted, the magnetic medium is arranged in what are called **tracks**, **sectors**, and **clusters**.

The format command divides the diskette into concentric circles called tracks. The number of tracks varies depending on the type of diskette. There are 80 tracks on 720KB and 1.44MB 3.5-inch diskettes. Tracks are further divided into individual areas for storage called sectors, and each sector stores 512 bytes of information. Clusters are groups of sectors. The cluster system reduces the overhead DOS would require if it had to keep track of every sector on a diskette.

■ Formatting 720KB Diskettes

If you try to format a previously formatted 720KB double-density diskette in a high-density drive, one of the following messages will be displayed:

- Checking existing disk format
- Existing format differs from that specified
- This disk cannot be unformatted
- Proceed with Format (Y/N)?

- Checking existing disk format
- Formatting 1.44M
- Invalid media or Track 0 bad - disk unusable
- Format terminated
- Format another (Y/N)?

Despite these messages, your diskette is OK; the problem is that you are trying to format a double-density diskette in a high-density drive. Typically, these double-density diskettes are remnants of old programs and are being salvaged as extra diskettes.

DOS gives you a way to solve this problem. Like most DOS commands, **FORMAT** contains switches that let you bypass or add settings. The switches dealing with density are as follows:

/F:size—Specifies the size of the diskette to format (such as 160, 180, 320, 360, 720, 1.2, 1.44, 2.88).

/T:tracks—Specifies the number of tracks per diskette side.

/N:sectors—Specifies the number of sectors per track.

In our example, we only will concern ourselves with the **/F** switch. To format a double-density 720KB diskette, type:

format/a:f:720 (no spaces between any character)

Your 720KB diskette now is correctly formatted and ready to receive data.

■ Diskette Hints

The 3.5-inch diskette is rugged, but you should take precautions to protect diskettes from damage. Here's what to do and what to avoid to prolong the life of a diskette and your data:

- Do not store the diskettes near strong magnetic fields such as stereo speakers. This could erase your data.
- Keep objects away from the recording surface of a diskette. This surface is fragile and scratches easily, so even the softest cleaning cloth could damage it. Fingerprints leave an oily residue that could prevent the read/write head from accessing stored data. Also,

abrasive substances will damage your diskette drive's read/write heads.

- Do not place diskettes in direct sunlight or near a heat source. Protect them from extreme temperatures and humidity.
- Make regular backups of your data.
- Keep your diskettes in an environment as free from dust as possible.

Following these simple rules should keep your data safe. But diskettes occasionally fail for no apparent reason, so duplicate your program diskettes using either the **DOS DISKCOPY** or **XCOPY** command.

■ Name Brand vs. Generic

You often will see substantial cost differences between name-brand and generic diskettes. The diskette medium itself, however, is manufactured by only a few companies, so generic diskettes often are produced on the same production line as name-brand diskettes. Differences may be slight, if any. Name-brand diskettes face stricter quality controls that add to their cost. Also, cases on name-brand diskettes are made with a better grade of plastic, increasing the cost.

■ Beyond The Diskette

Current diskettes have nearly reached their memory capacity potential. Other diskette mediums have been introduced but have not enjoyed wide acceptance. With the growing popularity of CD-ROM-based programs, today's diskettes might appear to be going the way of their 8-inch ancestors. But diskettes hold an advantage over CD-ROMs because not only do they read data, data can be written to them. Read/write CD-ROMs are not ready for the mass market, so they don't yet pose a threat to diskettes.

The next generation of diskettes may not be diskettes, but tapes. Advances in tape hardware technology are leading to diskette alternatives.

Tapes have greater memory storage.

But for now, the diskette remains the most popular portable way to store and read data produced on your PC. ●

by Richard F. Huber

Take precautions to protect diskettes from damage.



The Bits & Bytes Of Computing



You see them referred to in most advertisements and articles dealing with anything related to computing: bits and bytes. But what exactly are they? And why do you need to know about them?

■ Analog vs. Digital

In the beginning, there were analog computers, which were a lot like the old speedometers with an arrow going up or down telling you that you were going faster or slower. Used frequently in engineering, analog computers were used to measure factors such as temperature or pressure.

Gradually, digital computers took over because they let users digitally and discreetly simulate the same things that analog computers could do. (Simulations are done under the surface, with the user only seeing the final result.) With digital computers came binary language.

"A computer is only a machine," says Dr. Steven Mandell, a computer consultant and the author of "Dr. Mandell's Ultimate PC Desk Reference." "It isn't capable of understanding the symbols used in human language. To use a computer, humans had to convert their symbols to a form the computer could 'understand.'"

■ Digital Switches

Before binary language, everything was based on the presence or absence of something tangible (such as an electric current, light, or magnetic field). The punch cards that were once used for inputting information into computers would be "read" by metallic brushes, determining if there were holes or not by sensing an electric circuit; later techniques employed optical technology.

Binary language, Mandell says, "was formed on the concept that electrical states are present or not present. In the old analog

computers, we actually measured what the voltage was, but in a digital state, all we cared was whether there was a charge or not."

Binary language is based on two digits, a zero (0) and a one (1), with one representing the presence of an electric charge. These digits are called binary digits, or bits. Computers were designed to calculate or get information based on different schemes associated with having two states.

So far, binary sounds simple enough. But, you ask, what can you do with only two states other than turning them on or off? Not much—until you start stringing those ones and zeros into some kind of unit that means something to the human mind. But what kind of unit?

If people were just going to push through mathematical operations, the programmers would just have to figure out what the largest number would be that anyone was going to use. Then, they would convert that number from the decimal system to binary. As long as computers were designed to work with that largest number, users could perform their mathematical operations in binary and come out with the right number.

That would be just peachy if mathematical computations were going to be the only thing your computer had to do.

Since this isn't the case, a scheme then was necessary for all the other characters we use. One was created similar to Morse code, in which each character would be represented by a unique combination of ones and zeros. How many would be needed? Look at the characters we use in our language:

- 52 letters—26 uppercase and 26 lowercase
- Arabic numerals zero through nine
- punctuation marks
- other esoteric characters exclusive to other languages or disciplines
- characters yet to be developed

■ Standardizing Binary

Having developed binary language, programmers had to standardize bit patterning. From this, two standards emerged: ASCII (American Standard Code for Information Interchange) and EBCDIC (Extended Binary Coded Decimal Interchange Code). Developed jointly by several computer manufacturers, ASCII text is based on a seven-bits-to-a-byte system that allows for 128 symbols—essentially the bare minimum that would be needed. EBCDIC, developed by IBM, has eight bits in every byte, allowing for 256 bit combinations. These seven- and eight-bit strings were called bytes. (For trivia buffs, the term "byte" was coined by IBM Corp.)

Mandell says the presence of two standards created total confusion in the marketplace as people tried to transfer information from systems using ASCII to one using EBCDIC. ASCII-8 eventually was created to accommodate those machines using eight-bit coding patterns. ASCII-8 and EBCDIC are similar, but there are differences in the way bits are combined to represent some characters.

Why seven bits, or eight bits, as opposed to another number? The binary number system is called base 2, meaning that combinations are based on the number two to a certain power (2^x). Although Mandell says that "the main reason was the number of possible characters that you needed," he admits that part of the reasoning may have been ease of divisibility.

So, what would a numeral from our decimal numbering system look like in binary language? Let's look at a few:

```
1 = 00000001
32 = 00100000
100 = 01100100
150 = 10010110
```

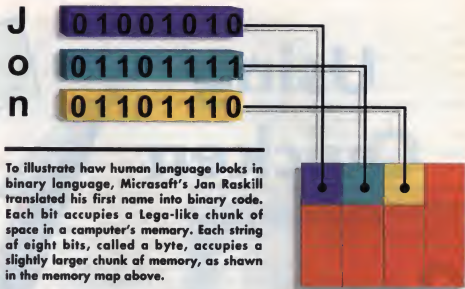
If you were to transmit these four decimal numbers over a modem or through your computer's central processing unit (CPU), you would be sending 32 bits, or four bytes. (The CPU is the "brain" of your computer.) The number 32, or rather its binary code, would be stored to memory and remain that way until it's erased or changed. Memory is based on the concept of nondestructive read, destructive write; merely opening a file and reading it won't change it. (To see how bits and bytes are stored in a computer's memory, see the illustration that accompanies this article.)

■ Why Should You Know This?

Understanding how bits and bytes work in your computer will clarify things such as compression software, modem speeds, and processing speeds and how they can work for you.

Compression software. Compression software uses mathematical algorithms to eliminate the repetition of characters for storage purposes. With text files, algorithms may condense tab stops or appearances of particular words to one statement. Because you're unlikely to have a lot of replication in a text file, compression software isn't always crucial for storage or modem transmissions.

Graphics files, which use an enormous amount of replication to form images, profit the most from compression. Consider bit-mapped images. Each pixel (a tiny dot that forms an image) is one byte (eight bits). Combinations of zeros and ones represent fonts, styles, colors, and shades of colors. Assume you have a bit-mapped image with a 1 x 1-inch square of royal blue. All of the pixels in that square have



exactly the same binary code. Algorithms, Mandell says, would insert a special code for replication accompanied by a number indicating how many replications there are of a binary code, thus saving memory space.

For video compression, says Jon Roskill, marketing director for Microsoft's Visual Basic, "every video frame has a huge amount of information, much of which is the same throughout several screens." Compression software would store the entire first frame; for the second frame, it would only store information that's different from what's in the first frame, and so on.

Modem speeds. Compression of video images for modem transmissions is especially crucial; without compression, you'll waste time and money on connect time charges. Remember that when a modem is processing 9600 bits per second or faster, it's *not* talking about bytes or words; it's talking about *bits*. To find out how many bits you're actually going to be transmitting, divide the number of bytes by eight. You may find out that you're in for a long wait.

Processing speeds. If you have a 16-bit processor, your computer is moving 16 bits, or two bytes, at a time; a 32-bit processor sends 32 bits, or four bytes, at a time. The same principle holds true for graphics cards. The more bits a card or CPU can push through, the faster your system is going to be—provided your operating system is up to your hardware's speed. A 32-bit operating system on a 32-bit system is going to let you do more in less time

because you're able to employ the full capabilities of your hardware.

Why can't 16-bit programs such as *Microsoft Word* or *Microsoft Excel* take full advantage of 32-bit processors? Roskill says it's because "there are a number of constraints that are applied to the product itself," such as the amount of memory that a program can operate in. The software itself isn't limited; it's limited by the operating system it works under. That's why many people say it's a waste to run a 16-bit operating system like MS-DOS on a 32-bit system; you're not taking full advantage of your hardware.

Mandell compares running 16-bit MS-DOS on a 32-bit system similar to "riding your bicycle down a four-lane highway." You've gone to the expense of building a wide highway that prevents the kind of information bottlenecks you had on your 16-bit system, but you're only using one lane (barely). Likewise, running 32-bit systems such as OS/2 or Windows on a 16-bit system, Mandell says, is as impossible as running a "super fast sports car on 2-foot-wide track for your bicycle." It won't run, which is why Windows and OS/2 are not backwards-compatible.

"As people are doing more powerful things with software, getting onto a more powerful operating system like Windows 95 [a 32-bit system] is going to help them out a lot because the capabilities of the operating system are much larger," Roskill says. ●

by Whitney Potts

Using Quicken

A Day-By-Day Diary

Quicken is the clear-cut champion among financial-tracking programs. Other programs perform similar tasks as Quicken, but the popular package from Intuit holds almost three-quarters of the market share. Millions of registered users can't be wrong, can they?

You've probably read enough about Quicken to know its graphical interface, which uses icons and mouse-clicks to perform commands, makes the program easy to use. And you've probably read about the variety and strength of Quicken's features. But exactly what are you getting into if you decide to use the program? Are you actually going to have time to use the program's features to their fullest? Is Quicken more hype than substance?

We'll give you a chance to determine whether Quicken is for you—before you invest hours using the program. Follow our month-long diary of Quicken use to help you decide whether you should burn your paper checkbook in favor of an electronic version.



27th. My bank statement for the previous month arrived today, and it's time to start using my Quicken 5 Deluxe CD-ROM program.

I spent a couple of hours today skimming through the user manual to get an idea of how the program works. It sure looks easy, but I've thought that about other programs.



28th. Running Quicken for the first time was easy, although it did take a little time to get everything set up just right. Quicken

walked me through the process of setting up my checking account through a multimedia presentation, which required about five minutes and explained a few of the software's basic features. Then I viewed some of the program's nine QuickTours, which are multimedia presentations that further explain various Quicken features. A couple of the tours were helpful, but most dealt with features I'm not quite ready to use. They were rather time-consuming, too (about 10 minutes apiece).

After finishing QuickTours, I went directly to the Quicken HomeBase, from which I control all aspects of the program. I clicked the Register button to begin using Quicken's electronic checkbook register for my account. It looks exactly like the paper register I've used in the past, except I don't have to do any of the math; Quicken takes care of it for me.

At each screen, Quicken uses a pop-up window (called a Qcard) that lets me gain additional information about the particular feature I'm using through multimedia presentations or through text and graphical explanations. Again, while these presentations were informative, they each usually added five to 10 minutes to my session. The time I spent with the user guide was kind of a waste because I gleaned the same information from the Qcards and QuickTours.

I then began entering the account transactions I had made that didn't clear the bank in time to be included with my latest statement. I spent about 30 minutes entering 15 transactions, but my entry time became considerably quicker as I became more familiar with the process. Choosing exactly what category to

use with each transaction was time-consuming, but because I want to use Quicken for creating budgets and spending reports, I know I'll need to take my time and choose the correct categories.

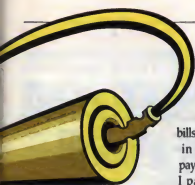


29th. I only wrote one check today, but I thought it would be a good idea to use the program again today while many of the processes were fresh in my mind. The electronic register for my checking account was just one mouse-click away. All changes I made were automatically saved.



30th. Bill-paying day (ugh). I usually pay most of my bills on the last day of the month, and I pay the others as I receive them in the mail. That's one reason I wanted to use Quicken: The software will help me remember when I need to





pay those straggler bills that come in after bill-paying day.

I paid about 10 bills today, and entering them into the Quicken checkbook register took only about 15 minutes. That process was the least time-consuming aspect of paying the bills, though. By the time I wrote checks, addressed envelopes, and licked stamps, entering the transactions into Quicken was kind of a hassle. I basically was doubling my workload writing checks by hand and then entering information into Quicken. (But you can avoid this double jeopardy. See the sidebar "Paying Electronically" for more information.)

I also began using the Quicken calendar today. While it took me about 20 minutes to set up all of the recurring monthly payments, it should save me a lot of time in the future. With the calendar feature, I tell Quicken what date I want to make a particular payment, and the software will alert me before the due date. Quicken also will automatically enter all necessary information into my electronic checkbook register after it alerts me about the impending payment. If needed, I then can make adjustments to the payment amount or the budget category. This should be a major time-saving device for me in future months.

The calendar is extremely easy to use. It looks exactly like a paper calendar. I just dragged an entry from the payment list onto the calendar date to set up the recurring payment. Nearly everything can be done with a mouse-click. The calendar lets me attach reminder notes to particular dates as well.



1st. I forgot to pay my car insurance bill yesterday, which is due every six months. But I still can enter it into the

Quicken calendar and have the program give me a reminder. The frequency of any individual payment can range from weekly to annually. The Quicken calendar alert feature is especially handy for those payments that aren't made every month because they can be difficult to remember.



3rd. Today I decided to try the budgeting and reports features in Quicken, and I spent about 30 minutes working with the program. This is another reason I wanted to begin using Quicken: I want to be able to create budgets and figure out where my money goes each month. Because I had entered only about one week's worth of transactions, my report wasn't very accurate, but it was interesting learning how to use the feature.

Creating reports was as easy as the other features have been. Again, everything required just a few mouse-clicks. After working with the report feature for a little while, I realized how important it is to take the time to categorize each transaction. Without accurate categories, the budgets and spending reports will be pretty useless.



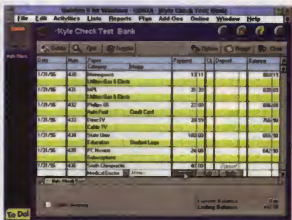
5th. I only used the program for about five minutes today, entering a couple of transactions. But I did discover a quicker method of entering transactions. In the past, I've used a combination of mouse-clicks and keystrokes. Today I only used the keyboard, and I switched between fields by using the TAB key. Entering the information was faster because my hands never left the keyboard.



20th. Oops. It's been more than two weeks since I had time to open Quicken, and I have several checks and a few automatic teller machine transactions to enter. When I opened Quicken, the program reminded me of a few monthly bills that were due, and it offered to enter them automatically into the electronic

checkbook register. Unfortunately, a couple of the bills were *overdue*. I learned one lesson about Quicken the hard way: Unless you use the program every few days, its alert feature stays silent. Quicken can't help you pay bills and take care of your finances unless you open the program and use it.

It didn't take me very long to put everything back in order—about 20 minutes. I did have trouble remembering exactly what



The electronic checkbook register is the heart of Quicken... and, best of all, it does the math for you.

category some of the older transactions belonged to, which will make my future reports a little less accurate.

All in all, my two-week Quicken lapse wasn't fatal. I was able to fix the problems and enter the new transactions in a relatively short time, and nothing happened that wasn't correctable. Still, I learned that regularly using Quicken every few days will let me get the most out of the program. I have placed Quicken in my Windows Startup program group so the program opens every time I turn on my computer. That way, I can catch all recurring transactions before they become past due.



22nd. I paid a couple of bills that arrived in the mail today and entered the transactions into Quicken, all in a few minutes.



23rd. I turned on the computer to play *Doom*, but I ended up in the Quicken program because I forgot it was in the Startup group. Quicken reminded me about an upcoming bill, but because I didn't feel

like taking the time to pay it, I chose the Remind Later option and exited Quicken.



26th. I decided to put the Doom game on hold today and enter a couple of checks I've written into the electronic checkbook. Quicken reminded me of the bill I had skipped paying earlier in the week and a second bill. Quicken also helped me remember to buy my mother's birthday present after I had placed a reminder note in the calendar. Maybe she'd like *Doom II*...



27th. The day of reckoning—my monthly bank statement arrived today, and I can use Quicken's Reconcile feature to balance my account. Just like Quicken's other basic features, I found reconciling my account easy to do.

When using the Reconcile feature, I just have to match the transactions listed on my bank statement with Quicken's list of unreconciled transactions. Quicken did help me find an ATM transaction that I had forgotten to enter into the electronic checkbook. Once I entered the cash withdrawal, my account balanced correctly, and

Quicken acknowledged my accomplishment with a special "Congratulations" screen.

Balancing my checkbook by hand usually required a minimum of two aspirins and one hour of work (and many times I skipped it altogether). Balancing the electronic checkbook in Quicken took less than 20 minutes, and that included fixing my omission.

■ Wrap Up

After using Quicken for a month, I found the program as easy to use as advertised. Granted, I didn't tackle some of the most complicated features of the program, but I wasn't really interested in them during my first month. I was able to adequately conquer the basic features—entering transactions into the checkbook register, creating reports and budgets, using the calendar, scheduling recurring payments, and reconciling my account—in a relatively short time.

The key to getting the most out of Quicken is taking the time initially to set up the program properly and then using the program once or twice every week. The initial setup can require anywhere from a few to several hours of work, but every minute you spend in setup probably will save you several minutes down the road.

Quicken does have a couple of disadvantages. Unless you use the program's check printing or electronic payment options, you double your workload because you have to type transactions into the computer and write checks by hand at the same time. Also, Quicken can't remind you of impending bills unless you actually open and use the program.

If you stick with Quicken, you'll have to do less work in each successive month. The program copies information you've entered previously to help save typing strokes. The calendar feature lets you have Quicken automatically enter recurring payments.

Quicken can't organize your finances for you, but it can go a long way in helping you accomplish your financial-tracking goals. The program's initial learning curve is extremely flat, meaning you can spend your time actually using the program and taking advantage of its features, rather than memorizing archaic commands or complicated steps. Quicken does require some extra time you probably wouldn't need if you stick with a paper checkbook register, but it provides so many more options than the paper register. Quicken gives you back as much as you want to put into it. ●

by Kyle Schurman

Paying Electronically

The hassle of writing checks by hand, then recreating that information by entering transactions into the Quicken electronic checkbook register, can be avoided. Quicken provides two methods for avoiding a double workload—check-printing through Quicken and electronic payment of bills through your modem. (A modem lets your computer connect to other computers around the world and share information through telephone lines.) Either method works well and will save you time in the long run. Additional cost is involved with both methods, though.

■ Check Printing

Rather than using the traditional personal checks you purchase from your bank, you'll print information on prepared checks you

then can mail to your creditors. Obviously, you'll need a printer (checks are available for dot matrix, inkjet, or laser printers).

When you purchase the prepared checks, they contain your name and address and your bank's information. Quicken prints the other information for you, based on what you've entered into the program. The prepared checks cost about 10 to 15 cents apiece, which is slightly more than personal checks you purchase from your bank. You can save further time by using window envelopes made to work with the printed checks. You will still have to spend 32 cents for a first-class stamp.

■ Electronic Payment

The CheckFree company handles Quicken's electronic payments. You send the information

concerning each transaction through your modem to CheckFree. The company then either sends a printed check to your creditor or makes the transaction electronically. You can schedule an exact date for the transaction to take place. A minimum of five business days is required before CheckFree can execute a transaction, meaning you can't make payments at the last minute.

Through CheckFree, you pay \$9.95 a month to cover your first 20 transactions (about 50 cents each) and then \$3.50 for each additional 10 transactions during the month. You avoid the cost of a personal check and a first-class stamp, though. ○

Does Your PC Have A Mind Of Its Own? Here's How You Can Take Control...

BY CLARK PARKER

If you're like me, you probably look at your computer with equal parts awe and incomprehension.

Sure, the possibilities seem limitless, but it sometimes seems as if just switching your PC on requires advanced education. You can read the operating manual, but more often than not it seems to have been translated from Japanese to English by someone who knows only Swahili.

Go to your local bookstore, and you'll find hundreds of books — all written for somebody else's software. Of course, most computer manufacturers offer telephone helplines as a solution...if you don't mind sitting on hold for forty minutes and then forgetting the question you meant to ask, that is.

ICS Learning Systems of Scranton, Pennsylvania has developed another option. It's called *distance education*, and for thousands of men and women around the world it's become the best way to learn the intricacies of computer hardware and software without having to go to class.

The way distance education works is simple. You enroll in the course that best suits your needs — anything from Desktop Publishing to an Associate in Specialized Business Degree in Applied Computer Science. Once you enroll, the school sends you instructional materials to your home or office. You get lessons, books, software—whatever you need to complete your course. Lessons are presented step by step, and most courses can be completed in less than a year. A Degree takes a little longer, but you can still come away with a four-semester Degree in as little as two years.

What most people like best about distance education is its convenience. Unlike a college class, you have complete control over when, where, and how long you study. There's no time spent traveling to and from class, and your "class schedule" is as flexible as

you are. Plus there's no waiting for other students to catch up or wishing the instructor would slow down. You move at your own pace. Exams are given on an open-book basis, which means you can be sure you've mastered the concepts rather than memorized the answers.

The courses are usually designed to provide students with the expertise to enter or advance in computer careers. In fact, thousands of students have used their training to secure promotions, pay raises, and even start whole new lives in computer career fields from Programming to PC Repair. And even if you just want to master the PC for your own enrichment and enjoyment, you can be confident that each training program provides up-to-date and comprehensive instruction.

All the information is presented so that even students who don't know a floppy disk from a soggy pizza can easily absorb every detail. Beginners love distance education because everything is presented in a logical, step-by-step format. There's no confusing "techno-speak," and you get plenty of hands-on experience. And even though courses are easy to understand and complete, they're so informative that even computer experts will learn something (and usually several somethings) they didn't know before.

But just because you study at home, on your own schedule, doesn't mean you're alone. ICS, for instance, has a large support staff at their headquarters, including expert instructors who are available to answer questions by toll-free helpline, as well as via the ICS site on the world wide web (<http://www.icslearn.com>).

Of course, ICS isn't the only distance education school out there, though it is the largest and most experienced in the world. You should compare ICS with other programs to make sure you get instruction that's right for you. The following chart shows a few of the differences between ICS and its leading competitor:

HOMESCHOOL CHECKLIST	ICS	Leading Competitor
Students Enrolled	250,000	55,000
Total Courses Available	58	30
Number of College Degree Programs	11	None
24-hour Student Helpline	Yes	No
Payment Plan Available	Yes	Yes
Finance Charges on Payment Plan	None (0%)	8%

ICS currently offers Career Diploma Courses in such computer specialties as: Computer Programming, Personal Computer Specialist, PC Repair, Desktop Publishing & Design, Computer-Assisted Bookkeeping, Small Business Management, and Personal Computer Fundamentals. You can also get your High School Diploma through ICS, or choose a Career Diploma course in a non-computer career field, like Electrician, Medical Office Assistant, Dental Assistant, Professional Locksmithing, TV/VCR Repair, Legal Assistant, and Appliance Repair. You can even earn an Associate in Specialized Business Degree by choosing Applied Computer Science, Accounting, or Business Management. Get an Associate in Specialized Technology Degree in Electrical Engineering Technology or Mechanical Engineering Technology. Every ICS Degree Program offers computer training.

FOR MORE INFORMATION, you can contact ICS directly by calling toll free **1-800-595-5505, Ext. 9711** Write to ICS Learning Systems at Dept. AA5S26S, 925 Oak Street, Scranton, PA 18515 or contact ICS on the Internet at <http://www.icslearn.com> The school will send you FREE information and a color brochure about the training program you're most interested in. There's no obligation, so contact ICS today!

Look Into Your Money's Future

With Mortgage & Loan Programs



All of us have experienced money grumbles and groans at one time or another. Either the checkbook won't balance, the bills are too high, or you just can't figure out that mortgage and loan stuff.

Well, computer technology might be able to help you in your quest to better manage your money. With mortgage and loan programs, you can make planning for investments and comparing loans faster and easier to understand. You can examine your existing car or home loans or even a new loan you're considering. Most mortgage and loan programs let you actually "view" your loan and its calculations, helping you easily select the loan that's best for your particular needs. Loans and mortgages no longer have to be a mass of meaningless numbers. We reviewed various mortgage and loan programs, looking at how easy or difficult they are to use and comprehend. We'll tell you how these programs work, describe their features, and explain why you would want to use them.

■ PC-Loan

PC-Loan from 20/20 Software is a graphical loan program for Windows. The easy-to-use

program features menus, dialog boxes, radio buttons, and many of the other interface controls commonly used by other Windows programs.

The PC-Loan application window contains several Loan View windows, but most users will generally have only one open at a time. Each Loan View window contains user-supplied information necessary for loan analysis. The application window also contains a menu bar, toolbar, and status bar.

This program lets you analyze your loan by providing sections where you fill in your loan information. PC-Loan then does the calculations for you, displaying the information in graphical or numerical form. In the Loan View window, you can enter information about the loan you want to analyze into the Loan Data Entry dialog box. You must enter four of the five loan parameters: the price, the down payment, the loan's interest rate, how long you will take to pay back the loan, and the payments. With a mouse-click, the indicated loan parameter is calculated, and information is displayed in the Loan Display window.

In this window, PC-Loan automatically displays your loan information as a graph, but you can direct PC-Loan to display numerical

information about your loan as a payment schedule.

PC-Loan also lets you compare loans so you can pick the loan alternative that's better for you. Perhaps you are considering refinancing your home mortgage and want to compare sticking with the original loan against starting a new one. Or maybe a car dealer is offering a low-interest loan for your new car or a cash rebate. With PC-Loan, you can compare your alternatives at once rather than looking at the alternatives independently. PC-Loan lets you see both loans graphically side by side. It also includes a Loan Wizard, which will tell you which loan is least expensive and exactly how much you will save.

PC-Loan has a help system that contains almost as much information as the manual and is only a mouse-click away. Help is context-sensitive so that it automatically displays help about whatever you are working on when you click the toolbar for help.

Besides giving you a payment schedule for various loans, PC-Loan can answer whether or not you should refinance your home mortgage and can tell you exactly how much money you will save or lose by refinancing.

■ Mortgage Analyzer/Loan Chief

The Mortgage Analyzer and *The Loan Chief* are two DOS-based programs from Insight Software Solutions. Some features of *The Mortgage Analyzer* include qualification

analysis, buy-vs.-rent analysis, lease-vs.-sell analysis, a solve for missing loan value calculator, and loan refinancing and daily interest calculators. The Loan Chief essentially comes complete with tools for loan schedules, charts, and calculators. Each of the financial tools contains a variety of options to allow maximum computing flexibility.

The Mortgage Analyzer isn't an ordinary mortgage program. It includes an option that lets users set up an accelerated pay schedule through variable extra payments. Mortgage schedules or summaries, or both, can be produced side by side with the original mortgage or by themselves.

In The Mortgage Analyzer, you don't have to wander through endless screens, entering data and wondering where the last screen went. Mortgage schedules and summary inputs are contained on one screen. The Input screen lets you fill in all necessary information, then calculates payments, mortgage insurance, tax savings, daily interest, interest paid, interest saved by acceleration, and complete schedules. These schedules can be produced on an annual or monthly basis, on a calendar or fiscal year with cumulative or non-cumulative values using whole dollars or exact cents.

Like PC-Loan, The Mortgage Analyzer features mortgage comparison screens where you can enter all values for two complete mortgages. For instance, you may enter identical information for both, then change the interest rate on one to see the difference it makes. Or you can calculate one as a conventional loan and the other as a Federal Housing Administration loan.

The Loan Chief is a menu-driven program with an amortization tool that lets you look at such options as variable payments and interest rates. Professional schedules can be generated with varying detail. Special options are available to show the money saved by paying off a loan early. Several predefined acceleration methods are available in addition to a variable payment, which allows optimum flexibility. Accelerated schedules can be illustrated side by side with the original schedule. Tax savings with mortgages also is available.

The Loan Chief's chart tool produces a chart of loan values based on criteria you select. Loan charts let you create a table of any type of loan values you might need. You select the

type of loan values you want computed—it can be loan payments, loan principal amounts, months in a loan, or the interest rate. Once you choose what you want to solve for, you enter one of the remaining loan values as a constant and the other two as a range of values. A chart is produced, solving for all loan values specified in the ranges.

The Loan Chief also features the Solve For Calculator for calculating loan values, consisting of four solve-for values. By selecting one of those values to solve, inputs appear that you enter to solve for the selected value. You can solve for principal, payment, duration, or interest rate.

■ Financing Your Home

Another DOS-based program, *Financing Your Home* from Decision Support Software, will run mortgage analysis for up to five

track your monthly payments. When you make tax payments, you can assign an interest rate to accrue simple interest. Make an additional principal payment, and see the overall effects on the amount of interest to be paid and saved. Update your data, and see what has been paid for the selected year and the total paid to date.

Financing Your Home is a little more difficult for the average home PC user, simply because it entails so much financial detail. It's more useful to real estate brokers helping potential purchasers or banks lending to the purchaser. Even mortgage brokers or accountants would find this program useful.

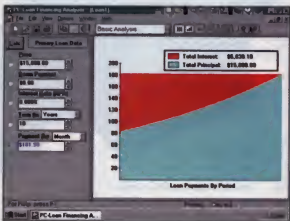
■ Summing It Up

Windows-based PC-Loan avoids the financial detail and numbers in favor of a simple graphical or numerical view of your loan or loan comparison. It's easy to use, and the schedules and graphs are easy to understand. PC-Loan is ideal for home use because of its feasibility, but for those home PC users who want a little more detail, you should consider The Mortgage Analyzer or The Loan Chief.

These include plenty of examples in their step-by-step text manuals as well as their online manuals. The programs provide good, detailed information on payments, schedules, and solving without confusing the mortgage and loan novice.

The money grumbles and groans probably won't go away by using these programs, but maybe the confusion over your money management will. ●

by Angela Gay



PC-Loan's Loan Display window lets you enter your loan information and see a graphic representation of the outcome at the same time.

mortgages and explain how to track your monthly payments. You can view your results on-screen in graphical form. You can determine the annual percentage rate for each loan, perform what-if scenarios, and determine which is the best mortgage for you. In addition, you can change the amortization schedule, change the length of the loan, use either fixed-rate or adjustable-rate mortgages, determine the tax benefit available, use 360 or 365 days per year in calculating interest charges, and either print the mortgage schedules or see the details on-screen.

The mortgage analysis of the program includes a detailed explanation of analyzing mortgage payments for refinancing or financing any residential property. You also will learn how to

For More Information:

PC-Loan
\$59.95
20/20 Software
(800) 735-2020
(503) 520-0504

The Mortgage Analyzer, \$30
The Loan Chief, \$25
Insight Software Solutions
(801) 295-1890

Financing Your Home
\$149.95
Decision Support Software
(617) 332-4500

Software For The Couch Potato

Computer technology is becoming more and more a part of our daily lives and with the increasing number of uses for computers and their ever-increasing capabilities, we look to our little electronic friends to fulfill more and more of our needs. Exactly where does computer software cross the line? A computer is, after all, a set of highly sophisticated bells and whistles designed to help us do our taxes and remove spelling errors from our documents. As much faith as we put into these machines and as much time as we spend with them, it would be nice to believe that they could respond in a friendly way to keep us company as we sit isolated at the PC.

We took a look around for computer programs that we thought might be taking computer technology too far. While the programs we found are entertaining, we think that some aspects of real life aren't so easily replaced by chips and wires. The programs are all well made, but the PC will never make life complete.

■ Dogz

Meet Leonard. He's a pooch in a PC. In other words, he's a dog simulation designed to have most of the characteristics of a real life pet. Leonard can do most things a living, breathing dog can do: He eats, plays fetch and tug of war, chews on a shoe, chases his tail, barks if he's feeling ignored, and he never needs a bath or a pooper-scooper. This simulation is so lifelike that trying to decide which puppy to adopt and which ones to leave behind in their kennels might be difficult. As Leonard grows, he develops his own personality and can be trained to perform his own set of tricks. Leonard's cute, and the program that brought him to life is clever, but Leonard still is a computer-generated

simulation.

In a way, *Dogz* provides users with the opportunity to care for a pet and train a companion without a lot of the hassle a real animal can be. On the other hand, a simulated pet is still only a simulation and not a very good cuddler when you're sitting on the couch in front of the TV.

The simulated puppy love doesn't stay within the confines of your PC; you can take it online. Just like the playgroups formed to provide a social environment for dogs, P.F. Magic has provided a similar service for their *Dogz* owners. P.F. Magic has a Web site (<http://www.pfmagic.com/dogz>) that lets you sample the *Dogz* experience through sample adoption kits. Once you have brought a dog into your PC, you can join the Kennel Club and communicate with other *Dogz* owners. You even can post a picture of your favorite digital canine on the Kennel Club to show off your faithful friend to other interested users. Despite clever enhancements that make this program as close as possible to owning a real pet, *Dogz* is still no replacement for a real furry friend.



■ Aquazone

Aquazone, the virtual aquarium, by Inago is another popular PC pet. Unlike the *Dogz* simulation, which conveniently eliminates some of a puppy's needs, *Aquazone* is realistic in every way we could see, perhaps to the point of becoming a nuisance. In real-life aquariums, by feeding the fish regularly and changing the water from time to time, they could be otherwise completely ignored and survive to a ripe, old age. This may not be true for the *Aquazone* version. With the first version, the user had to wait several days after "filling" the PC tank before adding fish. With the updated fish, you can choose an already-primed tank. Once you start adding life, food flakes sink to the bottom of the tank and contribute to the water's accumulating muck, and your pets float belly up at the top of the tank where they bob until removed. In an attempt to represent real life with its aquarium, Inago has gone over the edge. These fish require constant attention and supervision. Although the aquarium is equipped with a daily feeder,

starvation is far from the only fate that can befall these poor little fish without careful supervision. Our perfectly healthy and reproducing fish were viciously wiped out overnight by a variety of scaly diseases.

Aquazone started out as a disappointment because it only provided two kinds of fish with which to populate the aquarium: Leopard Catfish and Neon Tetras. 9003inc. offers optional diskettes that provide five more fish species, including Angel Fish and Black Mollys. Whether they're Neon Tetras or Black Mollys, if you don't keep a watchful eye on the pH level of your tank and the general health of your fish, they all float to the top to wait for "exportation." Once you've killed a fish and exported it, it can't be resurrected from its file of rest. The only way to restock your aquarium is to reboot the program and start all over.

■ Gone Fishin'

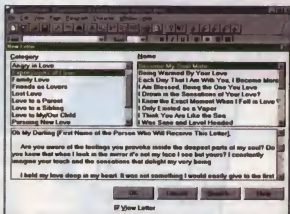
From fish in the tank to those in the great outdoors, *Gone Fishin'* is another simulation that might be too realistic. *Gone Fishin'* reproduces the whole fishing experience as closely as it can for software. Imagine lounging in your boat with a mild breeze blowing and the waves gently lapping against the sides.

You cast, reel in, cast, reel in by holding in the mouse button. Hours go by before you feel so much as a nibble. Enticing a fish to nibble your hook isn't accelerated for all the computerized technology behind the simulation. When the bite comes, you reel in hard, let the fish pull away, reel it in, and pull it up on the deck to find out it is 6 inches long and weighs 4 ounces. *Gone Fishin'* provides as many of the benefits of sitting out in the middle of the lake as your graphics and your sound card will permit. You can bring one of the main attractions of fishing, which is to be out in the middle of a quiet, peaceful environment, relaxing and enjoying nature, into a crowded noisy office.

Gone Fishin' could be used as a reference tool for learning which lures to use when fishing for a particular species of fish. You're even provided with a map detailing which fish are available in certain areas, at certain times, during particular seasons. One of the benefits of the simulated fishing experience is not having to be up at 5 a.m. to be fishing at dawn. Of course, with the simulated version, you can be on the lake at dawn and still have no chance for a spectacular sunrise... or a sunrise at all for that matter.

■ Decide Right

Virtual pets and fishing are frightening enough, but we also have entered the world of virtual advisors. *Decide Right* is an organizational program designed to help the user arrive at a logical and objective decision. The application doesn't have a simulated parental figure to offer guidance; instead, it gives a rather impersonal feel to decision-making. The creator, Avantos, has computerized the art of weighing the pros and cons and even has taken the program so far as to make a suggested decision for



With 808 Great Letters, users can find a missive to fit any occasion. But shouldn't some things be expressed in one's own words?

you. Using a database to weigh pros and cons instead of the traditional sheet and pen has its advantages, but letting an inanimate object make an actual decision to be used in the real world may be taking things a little far.

The user begins the decision-making process by titling the decision. From there, the program snowballs into complex simplicity. The program asks you to list your options, then input the criteria you feel you must consider to make this decision. The criteria then are sorted by level of importance and individually rated for each option of the decision. With all the warmth of Dr. Spock, *Decide Right* will spit forth the right decision for you, based on logical statistics and basic number figuring.

■ 808 Great Letters

Decision-making is usually a personal endeavor, and writing letters can be even more so. *808 Great Letters* provides an extensive letter database that includes some rather off-the-wall topics for a fill-in-the-blank letter. Form letters or templates are great for professional or otherwise impersonal communications when anyone's words will do as long as the I's are dotted

and the T's are crossed. In some cases, using a form letter might be a easier than writing the real thing, but you had better not get caught doing it. Letters to the family, consolation letters, love letters—all seem to require a certain amount of sincerity. Star Software has produced an application providing users with more than 800 form letters that cover a frightening array of situations from the standard business cover letter to a letter ending a relationship. The personal letters are surprisingly specific and usually more than a little melodramatic.

Some things should be expressed in one's own words, no matter how hesitant or grammatically incorrect.

Although we found all of these programs highly entertaining, they got old fast because they didn't quite live up to their advertised purposes. Pets, vacations, and human characteristics aren't something that should be on a PC. There is something inherently wrong with a letter that begins: Darling [First Name]. ●

by Elizabeth Panska

For More Information:

Dogz

\$19.93 (street)
P.F. Magic
(415) 495-0400

Aquazone

\$34.98 (estimated street)
9003inc.
(800) 401-9003
(416) 487-4005

Gone Fishin'

\$49.98 (street)
Amtem
(800) 810-7345
(801) 967-7900

Decide Right

\$79.78 (street)
Avantos
(800) AVANTOS
(510) 654-1276

808 Great Letters

\$49.99 (street)
Star Software
(415) 778-3100

Quicken: The Quick Fix For Your Finances

A more definite line keeps developing between the financial "quick" and "dead." Members of the "quick" clan were easy to pick out during the tax season, turning in their returns early with all their financial information in order. Members of the living dead were also easy to locate, due to the deep circles under their eyes from staying up all night sorting through the shoebox of receipts and forms they call a filing system.

One route many consumers find effective requires a PC and a personal finance package. Personal finance software lets users keep track of all their transactions, calculate where their money is going, create a budget, and follow loans or investments. The packages aren't just for checking accounts but also for joint checking accounts, savings accounts, credit card accounts, mutual funds—just about any account your money flows through.

Intuit's *Quicken* is at the top of the personal finance category with more than 53% of the market share as of March 1995, according to figures from the market research firm Dataquest. Here we look at how *Quicken* can help manage your money. If you already own the product, we've added a number of tips for what you can do with the program besides balancing your checkbook.

Quicken, now in version 5.0 for 1996 and selling for about \$60, has become the most popular personal finance package on a



market through an easy-to-use interface and a wealth of features.

Many of the features depend upon the form of *Quicken* you have: regular *Quicken*, *Quicken Deluxe*, or *Quicken Deluxe* on CD-ROM. *Quicken* includes the ability to track your accounts, investments, and loans; plan taxes and budgets; pay bills; create reports and graphs; and

bank online. In addition to these features, *Quicken Deluxe* includes a home inventory program, a mutual fund finder, an address book, and online stock information. *Quicken Deluxe* on CD-ROM has all of these features, as well as check-up worksheets; financial advice; on-screen manuals; and a little animation, sound, and video.

Every *Quicken* version can be tailored for managing the finances of home or a small business. When you begin using the program, you indicate whether you want to set up accounts for home or business, and the program adjusts some of its features and categories to your choice.

It's Not Brain Surgery

Fortunately, you don't have to be a rocket scientist to figure out how to put your finances in order. *Quicken* walks you through the process of entering accounts, asking simple questions, such as the name of the account, the balance, and the date. You also can enter extra information, such as the account number or customer service phone number.

If you can fill out a check, you can enter your transactions in *Quicken*. This includes all your checks, ATM transactions, deposits, account fees, service charges, or debit card transactions.

Did you pay the electric bill today? Type the payee, date, amount, and a memo on an on-screen check, or enter all the information directly into the columns of a checkbook register. Make sure you indicate what category the transaction fits into (in this case Utilities: Gas & Electric). *Quicken* does the calculations for you, subtracting or adding the correct amount to your balance. Was the transaction a transfer from checking to savings? Enter the transfer in one account, and it's carried over to the other account as well.

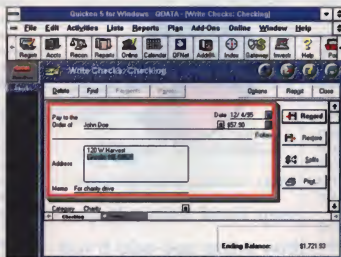
The next time you begin typing the name of the payee or a deposit, *Quicken* remembers

and automatically begins to re-enter that information, if you choose. Or, for checks that you write for the same amount at the same time every month, you can schedule the transaction in the Financial Calendar located in the Activities menu. This way, Quicken automatically puts your payment in the register on a certain day, or reminds you as the date approaches.

To simplify check writing, you can order special checks that you can print with your printer after you "write them" in the on-screen checkbook. (Just use the Write Checks window and the Print button.) You can order the checks through the Intuit marketplace (found in the Online menu). They cost more than ordinary checks, running from \$50 to \$100 for 250 checks, depending on the type you get. If you want to go completely electronic, you can sign up for an online bill payment service available through Intuit from almost any checking account at any financial institution. You "phone in" payment instructions through your modem, then the bank electronically transfers the funds from your account to the payee, or sends the payee a check within two to four days. If your bank doesn't have a special program, bill payment goes through Intuit, which charges about \$6 for the first 20 transactions per month (about \$30 a payment). Instructions for subscribing to the program are included with your Quicken program, and instructions on how your institution processes online bill paying will be sent when you subscribe.

Although you can do nearly all your money management on your computer, you'll still have to deal with your monthly bank statement. Did you enter all your ATM transactions? Were there any service charges? The monthly statement is the moment of truth, but there's really minimal work required. Click the Reconcile button in Quicken's main screen, and a new

window opens in which you enter the opening balance of the statement, the ending balance, any service charges, or interest earned. Quicken does the rest.



If you can write a check, you can enter transaction information into Quicken.

■ Help!

There's such a wide variety of tasks you can perform with this program that it actually can be a little overwhelming. QuickTours are helpful tutorials that show you how to organize finances,

Quicken, or they can be found in the Help menu.

An Onscreen Manual on the CD-ROM version also lets you read helpful hints on how to get the most out of the program and how Quicken can help with your small business. Just open the Help menu, and select Onscreen Manual.

Most people are not simply novices to the personal finance package, however; most are new to proper financial processes in general. Finance 101, located in the Deluxe editions' Help menu, assists people new to money managing. Here you can find answers to "dumb" questions (i.e., "What are mutual funds?"), or learn how to start saving for retirement. It also talks about things you might not think about (like whether you have enough money for emergency reserves) and offers tips for cutting corners. We

liked the worksheets that help you put the information to work for you, figuring, for instance, how large a mortgage you can afford or how you should allocate investment among stocks, bonds, and short term investments.

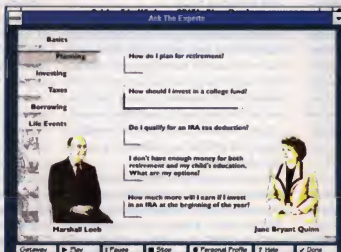
Other worksheets in the CD-ROM version, called Financial Health Checkups, let you decide if you have too much debt and if you have more assets than liabilities.

Another find for the money managing novice is the Ask the Experts section in the Deluxe versions' Help menu. There are a couple of dozen preset questions you can ask finance gurus Marshall Loeb and Jane Bryant Quinn. For instance, they can provide helpful tips for saving more money or deciding whether a fixed or adjustable mortgage is best, with some answers tailored to information you've entered into the program.

■ Calculating The Extras

Quicken's only real weakness is the fact that it has so many features; you occasionally have to dig to locate them all.

For instance, once you have a month or two's worth of transactions, you can begin getting an idea of where your money goes. The Reports



The Deluxe edition offers advice from experts Marshall Loeb or Jane Bryant Quinn about how to plan for retirement, what kind of records to keep that might reduce taxes, or how to change finances when having a child.

create reports, plan for the dreaded tax time, or track investments in Quicken. Video QuickTours on the Deluxe CD-ROM use an on-screen person to walk you through many tasks in Quicken. These Tours are available when you first set up

and Graphs feature is great for this. Click the Report button while you are in any of your registers or select a specific report or graph from the Reports menu, and Quicken takes all the categories you entered and tallies how much you spent on what. Or, you can create a pie graph to see what percentage of your income you spent on what categories. Go to the Reports menu, and you can view all kinds of reports for home or business. They'll provide information on your net worth, a tax summary of tax-related transactions, or whether you're off your budget. Choose EasyAnswers in the Reports menu, and you can get reports for specific questions, such as "How much did I save last month compared to this month?" or "Did I meet my budget last December?"

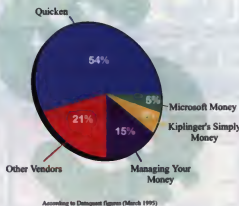
For a complete picture on that net worth report, you also can include your possessions using the Home Inventory portion of Quicken Deluxe. Select Home Inventory after clicking the Deluxe Gateway icon. Pick a room, then select an item category (i.e., appliances, electronics, or vehicles). A list of possible items will appear along the right side. Now you can select items in your home, estimating their replacement cost and resale value (which Quicken suggests for you). To add a special room or category, click the Locations or Categories buttons, then click New and enter the new name. As you add items to your Inventory, the cost and value totals accumulate. Click the Update button to record the information, and the cost of your possessions will be added to your account listing. This feature is also helpful if you want to be sure you have enough insurance to cover your possessions, and it can help you with claims.

■ Looking Ahead

Smart money management isn't simply discovering where your money is going. It also involves planning for the future.

Quicken helps you plan for short-term expenses. For example, you can see if you are putting aside enough money for taxes. Using categories once again can come in handy. Discover how much of your expenses are tax-related. For instance, charities, mortgage interest, or dividend income are items you need to total when figuring your tax schedules. If you're using Quicken for a small business, many of your categories will be tax-related. You even can take tax planning one step further with the Tax Link Assistant. Select the Lists menu,

The Personal Finance Software Market



According to the most recent figures from the market research firm Dataquest, Intuit's Quicken has more than half of the personal finance market share.

Category & Transfer, and then the Tax Link button. For instance, assign Dividend Income, State Income Taxes, or Medicine and Drugs line items to categories so you can quickly transfer totals to your tax return.

Use the Tax Planner located in the Plan menu to estimate if you are taking enough money out of your income for taxes, figure how much you will owe at year-end, and show what would happen if you bought a home or filed a joint or separate tax return. To fill out the Tax Planner, you'll need such items as a pay stub, tax forms, and receipts or records for things such as child care or medical payments to get a full picture.

To create a report that shows the total from tax-related income and expenses, choose the Reports menu and the Home option to create a Tax Summary Report. Or, create a Tax Schedule Report with the exact figures you will need for your 1040 form. For correct numbers, however, you'll need all your information dating back to January. Once you have it all, you can transfer the Quicken data to a tax program, such as TurboTax. Quicken can give you all the numbers you need for your taxes, but an additional tax program can place them on tax forms and analyze the information.

Once you discover where your money is going, put it on a budget. This lets you estimate how much you need to spend each

month on specific categories, based on what you've done in the past. Click the Budgeting icon, and enter an amount you expect to bring in or spend in each category (don't forget to save when you are through). If you don't want to enter an amount for every item, you can assign values to supercategories. Roy Rosin, product manager for Quicken for Windows, suggests putting all leisure and entertainment categories into one supercategory called "fun," so you can budget at a simpler level. Just choose Category & Transfer from the Lists menu, click the Super button, then the New button. Finally, type a name for a supercategory, and indicate which categories should fall underneath.

If you want Quicken to create a budget based on your spending so far, click the Budgets button, then the Create button. Remember to be realistic. If you know you're planning a graduation party in May, estimate a little more money that month for food and supplies. After you've set your budget, use the report and graph features to see just how closely you're sticking to your predictions and where you need to be a little more careful. Or, select the Progress Bar in the Plan menu. Quicken will place a bar along the bottom of the screen showing how closely you're sticking to your budget.

Perhaps, as you follow your budget, you'll find a few dollars to put away. Use financial planners to figure how to save for specific events, such as a child's education, retirement, or an automobile. For instance, select Plan, Financial Planners, and Savings to calculate how fast your interest will accumulate for a new savings plan. Or select the College Financial Planner to calculate how much money you need to save, entering figures into the equation for items such as college costs, how long until the child goes to college, the number of years enrolled, the annual yield rate, and how much you've already saved. A similar Retirement Financial Planner helps you determine how much you need to put aside each month for retirement.

Quicken also tracks loans for a house, car, and so on. Before you get the loan, go to Finance 101 and compute how much the bank will loan you. Then, use a forecast graph to see what your finances will be like in the next months. When you get different loan proposals, use the Loan Planner in the Plan menu under Financial Planners, and enter the loan

amount, interest rate, number of years, and period. Quicken will show you how much principal and interest you'll pay each month.

■ Tracking Investments

One of Quicken's strengths is that it can help the most basic user, but it also can grow with you as you get more adept at handling your finances. After you've created a budget and find you have a few extra dollars to spend, perhaps you'll try a little investing.

Click the Investing icon, and Quicken helps you set up this account, just like a checking or savings account. Type in a name, if it's taxable or deferred, and if you want it linked to the checking account. Indicate if you're investing in stocks, mutual funds, or bonds. Then enter the pricing information and how much you own.

Now jump to the Portfolio view. Here you can see the value of your investments, somewhat like a checking or savings account. You enter actions such as adding and removing shares, reinvesting income, or a stock split through the Action button. You also can view a price history report or a graph of your investments. If you've got a modem, you can subscribe to a special feature called the Portfolio Price Update in the Deluxe version to download quotes of stocks, mutual funds, and indices directly into your portfolio, so you don't have to do it. Just click the Update button; but remember, you must indicate the ticker symbols for your investments, and you pay a fee for the benefit.

Maybe you aren't ready to buy any stocks or bonds just yet. The Deluxe version's Investor Insight is a handy tool for anyone who wants to watch stocks or track the stocks they already own. Subscribe to the service through Quicken, and Investor Insight gives you 90 days of news stories from sources such as *The Wall Street Journal* or the *Business Wire* and five years of price quotes for any stock or mutual fund on the NYSE, AMEX, or NASDAQ that you place in the program's Watch List. Investor Insight also includes charts and reports with the price history of investments so you can analyze data and see the financial health of the company. Each time you call, it will bring you up to date. But, you will need several megabytes of hard drive space for this feature, and the cost is about \$10 a month for a basic plan covering 10 securities.

With the Deluxe edition, you also have access to the Mutual Fund Finder. Tell the program what kind of stocks or bonds you want to invest in (domestic or international), how much risk you want to take, a minimum investment, along with a number of other determinants (i.e., star rating, type of risk, and dividend yield). Then the program pulls up investments that meet your criteria, along with a history of returns and background analysis by Morningstar.

One of Quicken's strengths is that it can help the most basic user, but it also can grow with you as you get more adept at handling your finances.

■ Take It Online

Tired of entering transactions into Quicken? Take them on the Infobahn. Quicken has signed up a number of banks that let you bank via your computer. For instance, you can download bank statement information, such as your balance or transaction information, so you don't have to enter it. If you have a checking and savings account at a participating bank, sometimes you can transfer money between the two.

Only about 23 financial institutions are signed up for the venture, including American Express, Bank of Boston, Chemical Bank, Citibank, First Chicago, Smith Barney, Union Bank, U. S. Bank, and Wells Fargo. Quicken's Rosin says many of the companies provide the service for free, and since firms other than banks are included in the list (including credit card companies), your chances of banking online are increased.

■ Make Money Really Work

As you get more adept at figuring where your money is going, you'll want to make your money work harder for you.

If you want to get more finicky about where you're spending money, create your own categories and subcategories using the Category & Transfer option in Quicken's Account menu. Click the New button, and create categories for your special situation, such as "home mortgage interest" if you're paying for a home; "books," "tuition," and "students fees" if you have a student in college; or "wedding" if there's a marriage in your future. You even can create categories for alimony and child support payments or checks. Remember to indicate if they are tax-related and what portion of your tax form they may relate to.

You can split transactions into more than one category, if, for instance, you went to pick up a gift but also got a tube of toothpaste. Splitting transactions comes in handy when you place your paycheck into Quicken. Enter your gross pay, then split into categories the amounts taken out for federal and state taxes, social security, medical insurance, a 401K plan, and any other company plans. You'll have all the information you need at tax time. Also, you can allocate part of the check to your checking or savings account without entering separate transactions. Then you can highlight your paycheck transaction, click Report, and see how much of your income is going to taxes.

If you don't want to go to all this trouble every time you get paid, however, you can enter your take-home pay, enter the other tax-related totals in your tax software, and ignore them in Quicken.

Are you having trouble putting aside money for a vacation, automobile, or college? Quicken can help you set up a savings plan and "hide" money away. Select the Savings Goals option in the Plan menu, click the New button, and enter a goal name, amount, and finish date. In the right corner the program indicates how much you will have to contribute per month, and a Contribute and Withdrawal button let you transfer money to this new "account." Savings Goals essentially transfers money automatically from a regular account and hides it from your balance. It's as if it wasn't ever there, and you don't have it to spend. The money is still there, of course, and you can have it back at any time. If you want to check your progress, select the Progress Bar.

Writing regular payments can go a lot faster when you've got the mailing address handy. Enter the names and addresses for bills you regularly pay into the built-in financial address

book. You also might want to enter a list of emergency contacts to the address book, such as relatives, friends, doctors, and dentists. You can add phone numbers and fax numbers to the address entries and print out the entries to post by the phone.

Maybe you're in the habit of paying with pocket cash. Keeping track of an ATM withdrawal is hard to do and often is entered into the miscellaneous category. You can set up a Quicken cash account, along with your checking, savings, and credit card accounts. Transfer money into the cash account, just like you would into checking or savings, and then after a vacation weekend or shopping spree, come home and enter how much cash you spent, indicating categories for each expenditure. This will help you get a better handle on where the money goes.

Quicken doesn't have to simply manage your money accounts. Rosin says it can help you get other aspects of your life in order. For instance, he suggests you use the Home Inventory feature to track the value of any important collections, such as antiques, videos, beer mugs, or baseball cards. Type your entries into Home Inventory, and you can calculate the value of your collection for yourself or insurance purposes.

Or, create an investment account to track a nonmonetary item, such as your frequent flier miles or your automobile mileage. (If you would do this in a checking or savings-type account, the amount may be figured as a dollar amount and added to your net worth.) Add miles in as a Shares In Investment Action, and deduct them (when you cash in frequent flier miles) as a Shares Out Action. Remember to enter "Miles" in the security files and enter 0 as the price so it doesn't affect your net worth.

■ Beyond The Checkbook

Uses for Quicken go much further than tracking your checkbook. You can use the program to see what kind of a home you can afford, how much you need to put aside for retirement, or plan for college. You can plan for an automobile, figure the car payments, and then use the Forecasting feature to predict how the car will affect your future cash flow. You can track your investment portfolio and receive more information to make better investment decisions.

"A lot is happening once people get beyond the basic check registers," Rosin says.

There's a broad range of uses that aren't immediately apparent when you begin using the program, Rosin says. Be creative with your finances and assets, and you may come up with an idea that may surprise even the makers at Intuit. ●

by Cindy Krushenisky

For More Information:

Quicken
Intuit
(800) 964-1040
(520) 295-3110

Other Packages On The Shelf

While Quicken may dominate the personal finance software market, it isn't the only player in the game. Other titles have made a name for themselves with easy-to-use and unique features.

Managing Your Money (MYM), now by MECA Software (800/288-6322 or 203/255-1441), is Quicken's closest competitor with about 15% of the market share. MYM (\$39.90 at Egghead) also uses a check/register interface to track transactions in all your accounts, as well as print checks and pay bills electronically. You can create helpful reports and graphs or see your overall financial snapshot. Financial planners provide help with retirement, taxable savings, savings bonds, 401K plans, and IRA accounts along with life insurance, taxes, tuition, and home loans. MYM will help track investments, while a QuoteLink feature goes online to update investment information automatically. Though this program doesn't include online-banking-at-home options, it does have a lot of financial advice from Andrew Tobias, a well-known financial author and columnist. The program also has links to CompuServe's Financial Services and Forums. You still have to pay for your time on CompuServe, however.

Microsoft Money by Microsoft Corp. (800/426-9400 or 206/882-8080) has almost 5% of the market according to Dataquest. This program (\$28.48 at Egghead) lets you enter transactions in a familiar register environment, print checks, pay bills electronically, and schedule payments on a calendar. Account and Loan Wizards walk you through the setup process. You also

can create helpful reports, and a unique Chart of the Day feature opens a new pie chart of your financial picture every time you open the program. An Autobudget feature helps you create budgets, an Investment Portfolio helps you manage investments, and an Online Quotes feature automatically updates that information. Finally, in the new Windows 95 version, Microsoft Money has built up quite a network with banking institutions so you can go online and bank from home to check statements and balances or to transfer money.

If you're looking for advice, *Kiplinger's Simply Money* by 4Home Productions (800/773-5445 or 516/342-2000) has a lot to offer for home and small business, but it has only 5% of the market share. There are more than 200 topics worth of financial advice from Kiplinger that are truly integrated into the program, which sells for \$34.95 at Software City. Use a check-like interface, or drag and drop payee or income items into accounts to pay, deposit, or transfer money. You can print checks, pay bills online, create reports and graphs, and track your investments online. Eight financial calculators help users figure mortgages and loans for refinancing, interest, investments, college planning, and life insurance. Kiplinger's can track tax information to transport to a tax program, and an AutoBudget feature creates budgets based on past spending. There's no online banking, but the program includes a CompuServe trial offer to access online Kiplinger's information. ○

Quicken's Associates

Other Financial Applications From Intuit



Quicken balances your checkbook, helps you create a budget and stick to it, tracks investments, reminds you to pay your bills, and helps you organize your taxes. Even with such a wide range of talents, however, one program can't explain all aspects of money matters in the detail many financial novices need. Quicken, the central finance program from Intuit, leads Intuit's pack of personal finance software and tends to overshadow Intuit's other offerings. The additional products can stand on their own, but some of them also can share information with Quicken through several integrated functions.

Quicken covers a wide range of money-management techniques and provides good general information, but it may be unable to provide the attention to detail of a more specialized application. The main, comprehensive budget manager is not overlooked in several of its related applications. Three of the five Intuit products we looked at can integrate information from Quicken, making personal money management that much more convenient.

■ Parents' Guide To Money

Starting a family can be a frightening prospect in many respects, not the least of which are all the new and sometimes unexpected reasons to whip out your checkbook. In addition to providing for today, you also must prepare to meet future financial needs. *Parents' Guide to Money* is a good, step-by-step planner

for the monetary concerns you may have when you start thinking about adding mouths to the nest. The program walks you through budgeting for retirement, college education, life insurance, disability insurance, health care, and childcare. The CD-ROM contains detailed descriptions of child care options, health care plans, retirement plans, and life insurance plans. The conscientious detail given to these definitions produces an amount of information that may be difficult to sift through at times, but Intuit provides a simple, descriptive interface to help walk you through.

As you use the program, you enter your current financial information (assets, income, liabilities, etc.) as well as everything you want to be able to pay for: a new car, college, or retirement. Intuit will take your current salary, expenses, length of time to save, rate of inflation, and the future total you'll need and calculates the amount you should save each month to prepare. As your income and expenses change, you can modify your plan accordingly. One of the best features of the program is the simple, but well-detailed, explanations of each of the options you could include in your plan, such as: au pair childcare, HMOs, and 401k. All are spelled out in language simple enough for a novice. *Parents' Guide to Money* is a complete personal finance guide, including financial

plans for parents' adult needs as well as preparing for the future of their children. With or without a family in the works, *Parents' Guide to Money* makes a good, basic economic planner.

■ Quicken Financial Planner

Although everyone looks forward to the days when punching a time clock are far behind them, retirement may not be the relaxing reward we anticipate without careful financial planning. *Quicken Financial Planner* focuses heavily on retirement as the reason for investments. Unfortunately, this isn't a program for the investment illiterate. Instead it seems to be more of a device to track and build on current investments than a tool to explain the ropes and ease users into new opportunities.

The Expert, a feature showcasing advice from Jane Bryant Quinn, author and *Newsweek* columnist, provides answers to some of the more basic questions and concerns that arise when large sums of money are involved. But it doesn't necessarily explain the topics discussed in the meat of the program in any greater detail. For users with some knowledge of investments but not enough to be considered experts, *Financial Planner* can provide a good platform for organizing and planning your investments. If you can muddle through the economic jargon, *Financial Planner* will provide plenty of solid information and advice to make your investments and assets work for you and to help you achieve your financial goals.

■ QuickBooks Pro

A professional image is important to a small business, but the high-maintenance look may be costly and difficult to maintain. The ability to keep consistent, accurate financial records and produce professional and precise financial correspondence is essential in competing with larger organizations. *QuickBooks Pro* is a comprehensive accounting system directed at the SOHO (small office/home office) and small business. All sheets, ledgers, invoices, bill-paying, and payroll can be done from your PC after entering all records and monetary exchanges. Entering information for bills, sales, customer profiles, purchase orders, and miscellaneous transactions is fairly straight-forward, but using the databases to generate a document can be complex and confusing. In trying to do many functions as simply as possible, Intuit may have made *QuickBooks Pro* more difficult to manage.

Even if the rest of the program might confuse, the Reminder feature receives a "thumbs up" for making bookkeeping simpler for the absent-minded. Reminders can be set to pop up each time you run the program and let you know which transactions need attention. The function can be set to display specific transactions, such as paying the electric bill or ordering office supplies. The program is designed to be flexible for a variety of businesses and contains documents for businesses ranging from sales to construction. Users may save time by entering each transaction only once. The information then follows the user from one activity to the next.

■ ExpensAble

Keeping track of luggage, presentations, and files can be a full load on a business trip. Throw in the additional stress of tracking expenses and the business trip can be a juggling nightmare. Intuit's *ExpensAble* helps keep track of business-related and personal expenses with expense sheet templates to help itemize each individual expense and to whom the bill goes.

The spreadsheet has blanks for the user to enter information such as type of expense, amount, purpose, date, method of payment, and description. In addition to the basics, the spreadsheet also lets you designate the expense as reimbursable, non-reimbursable, or personal. One expense can be split between different agencies. For example, a trip can be split between a sales representative's company and the customer. The program contains quick-enter options to help itemize hotel bills quickly or fill in repetitive entries with a quick click. To ensure you've remembered everything,

Intuit provides a checklist under the Preview option to remind you to include the most common trip expenses.

After all pertinent information has been entered, *ExpensAble* formats transactions into a neat, easy-to-read expense report. The program requires only three megabytes (MB) of RAM and fits comfortably on a portable PC for added convenience. *ExpensAble* offers detailed instructions and an easy-to-follow, step-by-step production flow that makes entering expenses fairly painless. But like other financial trackers, you must fire up the machine and keep records for the program to work.

■ Family Lawyer

If paying lawyers to draw up documents in legalese is consuming cash you could be investing, *Financial Lawyer* may be for you. It walks you

through the steps of creating several kinds of wills, establishing power of attorney, employment agreements, and more personal documents such as letters to school or complaints to companies.

The program designs your documents by asking relevant questions and using your answers to fill the blanks of a form document. Family Lawyer explains what a response to each question means. For example, a blank in the Simple Will document that says "Yes, include specific bequests section," is accompanied by a detailed paragraph defining the term "bequest" and an example. All terms are defined in plain English, which then translates back to legalese for the finished product. Each document and its specific purpose is explained in full detail in the Document Information option. ●

by Elizabeth Panska

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Becoming A Pro With Word Pro: Part II



In last month's issue, we introduced you to Lotus Development Corp.'s new word processing program, *Word Pro*. We explored its workplace and many of its most popular tools. Now, we'll expand on this knowledge and move you a few steps closer to becoming a master in the art of *Word Pro* word processing by discussing document organization, page formatting, and editing.

■ Keeping Tabs

Whether a document is short or long, it needs structure. *Word Pro* provides several features to help you organize and structure your documents and, therefore, easily navigate within them. These features include divider tabs, divisions, sections, and visible guides such as the Page Gauge or the Page Sorter. Let's look at each of these tools.

Divider tabs. Divider tabs divide and section a document, much like manila files in hanging folders.

Divider tabs appear between the document and the SmartIcon bar. Some divider tabs are created automatically when you access

certain features, such as a Table of Contents, Index, or Envelope. You can create others so you can quickly and easily move to various areas in your document.

Divider tabs are useful because they let you easily maneuver through and edit a document. When you click a divider tab, *Word Pro* will automatically move the display to that area of the document, no matter where the cursor is currently located. And when you click a tab and drag it to a new location, *Word Pro* reorganizes

the document by moving the tab and its corresponding text.

NOTE: To edit the name of a divider tab, double-click the tab. The tab will expand, letting you type the new name. If you want to hide divider tabs, click the file folder icon in the right-hand corner of the *Word Pro* workplace, just above the document window. To display the tabs, click the icon again.

Divisions. Divisions are areas of a document; each has its own divider tab. They can include things such as text, frames, tables, and linked files or objects. They always start on a new page, after a page break. And *Word Pro* ensures

that you always have at least one divider tab—with the default SmartMaster, it's named "Body."

In addition to the maneuvering and editing advantages of divider tabs, divisions are useful because they let you use different templates, or SmartMasters. For example, you can use a Memo SmartMaster for one division in a document, a Fax SmartMaster for another, and a Letter SmartMaster for a third.

To make a division, place the mouse pointer on an existing division divider tab and click the right mouse button. A Shortcut menu will pop on-screen. When you select Quick Division from this menu, Word Pro creates a new division to the right of the divider tab you clicked. This division will have the same formatting as the division on which you first clicked. To create a division with different properties, choose New Division to open the Create Division dialog box.

This box gives you more control over the properties of your division by letting you insert a file, use a SmartMaster, or add a linked object. For more information about using it, see Word Pro's online Help.

Sections. Sections exist within divisions; they can start anywhere in a document, including in the middle of a page. And there can be more than one section on a page. Sections have special divider tabs, which appear inside a division's tabs. When one is created, a section mark—a file folder located on the left side of the screen—is displayed in the document, provided the Show Section Marks option is activated under the Set View Preferences command on the View menu.

One of the benefits of sections is that they let you begin a new layout on the same page as another layout. For example, you can change the number of text columns, mix a table with text, or alter the page margins for a certain area of text. However, they do not affect the division's SmartMaster layout.

To create a new section, choose Section from the Create menu. In the resulting Create Section dialog box, you can specify where you want the section to begin—on the next page, within the page, or on an odd page or an even page. It also lets you choose the initial page

layout and decide if you want to show a divider tab and use the header and footer from the previous page. After you make your specifications, click OK. A section mark will be inserted on your document page, and a new section tab will appear. You must use this method to create the first section in a document (see Figure 1).

Once one section divider tab is available, you can click the right mouse button on the tab to open the Shortcut menu. Choose Quick Section to add a section divider to the right of the section on which you clicked. Another section mark will be inserted in the document, and a section divider tab will appear.

Page Gauge. This unique little tool helps you quickly move through a document and find a desired location. To bring the Page Gauge on-screen, drag the page indicator on the vertical scroll bar. As you do so, the Page Gauge will appear to its left, displaying the page number and the division or section name in which the indicator is currently located. When the desired location is displayed by the Page Gauge, release the mouse button, and the screen display changes to show that area.

Page Sorter. The Page Sorter lets you see the overall organization of a document and organizes the document into groups of pages. Word Pro forms each group by looking at where a document's page breaks, divisions, or sections are located.

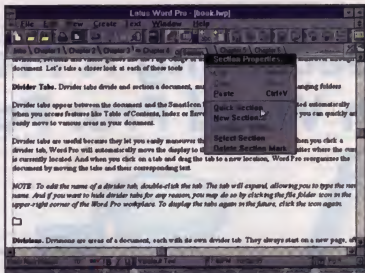


Figure 1: Divisions and sections help organize your document by providing divider tabs to separate them and move easily between them. In this figure, the Chapter 4 divider has one section. (The section mark can be seen in the text.) We're also in the process of creating another with the Shortcut menu.

By choosing Page Sorter from the View menu, you can look at the groups of pages that make up your document's divisions. For example, if you have a two-page Table of Contents, followed by five pages under the division heading Body and three Index pages, you could see full-page views of the divisions simultaneously.

By testing and experimenting with dividers and sections, you'll soon catch on to when you want to use a section and when you want a divider. Since everyone has different organizational tastes and methods, you'll also discover what works best for you in organizing documents and maneuvering within them.

However you organize your document, you'll want it to look good. That's why you'll also want to experiment with the formatting of your Word Pro pages and text.

■ Bird's-Eye View

The way your document looks depends largely on its formatting. By changing the orientation of your page or its margins, you can give a document a new look.

To get an idea of how your document will appear, Word Pro's View menu offers several ways to view your document.

The Zoom To Full Page command provides a full-page view of your document. You won't be able to read it, but you can get an excellent idea of what its finished layout will look like. (This command also is available as a SmartIcon. It's located just to the right of the printer icon and has a page graphic on it.)

The Split Left-Right view lets you examine the same document in two windows, with the ability to look at different areas in each. Changes made in one automatically will be made in the other.

The Split Top-Bottom provides two document windows, one on top of the other.

NOTE: To exit from a split view, choose the Clear All Splits command.

The Special Views command opens a dialog box with various viewing options. One of them is PageWalker, which lets you look at your document in a slightly smaller box (suitable for

editing) while displaying a full-page view on the side (see Figure 2).

Once you know how your document looks, you'll want to change aspects of it. Let's look at some of the specifics of page layout that you may want to alter. You can change many of these through the Page Properties box. To access this box, place the insertion point on the page you want to alter. Click the right mouse button to open a Shortcut menu and choose Page Properties. This brings up the Properties For Page Layout box. (You also can click the Page InfoBox SmartIcon—the one with the blue square, yellow diamond, and page graphic.)

Select the Size and Margins tab, which has a picture of a document with red rulers on it, within the Page InfoBox. From this tab, you can change such properties as paper size, orientation, and margins.

To change the paper size, go to the Page Size box and select from the drop-down list of paper size choices, which include Letter, Legal, Executive, Envelope, and Custom.

To switch page orientation, go to the Orientation box and choose either the Portrait display, which shows the paper as being taller than it is wide, or the Landscape display, which shows the paper being wider than it is tall.

Finally, to adjust the margins, move to the Margins box and select new measurements for the Top, Right, Left, and Bottom boxes by clicking the up/down arrows or typing in a measurement in inches.

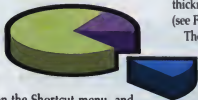
Adjusting these items can make a big difference in your document's appearance. But changing the text formatting will change the way it looks even more drastically.

■ Adding Impact

Formatting the text in your documents can give them more personality by making sections of text larger, using bold or italics, centering certain lines, and even giving certain areas shading. Let's look at some of the most popular text formatting tools in Word Pro.

The easiest way to edit the formatting of a document is to highlight the text (one word, several paragraphs, or an entire document), and access the Word Pro Text InfoBox. You accomplish this by clicking the right mouse

The best way to learn about the different formatting Word Pro can produce is to experiment.



button to open the Shortcut menu, and choosing the Text Properties command. (You also can click the Text InfoBox SmartIcon—the one with the blue square, yellow diamond, and letters on it.)

This opens the Text InfoBox, which says Properties For Text in its title bar. The InfoBox has several dividers, each letting you set properties for different effects. Let's go over the most-used tabs.

The Font tab, which has an *a* and a *z* on it, lets you select your font, its size, and its attributes (such as bold, double underline, strikethrough, and small caps). You also can change a font's color.

The Alignment tab, which has several centered lines on it, lets you choose the justification of your lines. You can choose left-justified, centered, right-justified, or full justification. This is where you set the amount of spacing between lines (such as double, single, or one-and-a-half) and the amount of spacing between paragraphs. You also can select from different paragraph indentation patterns on this tab.

The Borders and Shadows tab, located just to the right of the Alignment tab, lets you add lines around one or all sides of your paragraph. You also can add a shadow of any thickness or color to your paragraph borders (see Figure 3).

The Bulleted Lists tab, which has a bullet with lines next to it, lets you quickly format your bulleted lists. Here you can choose from a wide variety of bullet and figure styles and select how you want the list indented around the bullets.

The remaining tabs in the Text InfoBox let you set tabs, paragraph breaks, and styles. We don't have space to discuss them here, but you can get more information from Word Pro's on-line Help.

The best way to learn about the different formatting Word Pro can produce is to experiment with the options in the Text InfoBox. The box uses drop-down lists, buttons, and check boxes that you select to change properties. Try them out; if you do something you don't like, you can always change it back. Now, let's look at some of the ways Word Pro lets you edit your documents.

■ Editor's Tools

There will be times when you want to make some changes that go beyond the appearance of your document. To help you make these changes, Word Pro has several editing procedures. Some are outlined below.

Deleting text. To delete a word or group of words, select the text by highlighting it with the mouse. Then press the DELETE or BACKSPACE keys. You also can insert the cursor just before a word you wish to delete and press the DELETE key to delete the word a character at a time. Likewise, you can insert the cursor after the

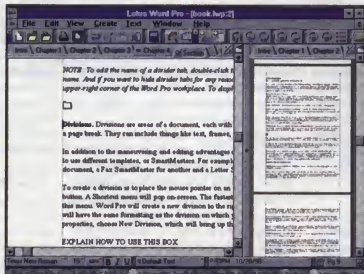


Figure 2: The PageWalker view lets you edit your document in one window while looking at it in full-page view in another.

word and click the BACKSPACE key, deleting the word character by character.

If you make a mistake while deleting text, click the Undo SmartIcon (the one with the arrows that look like a sideways U-turn sign) or select Undo from the Edit menu.

Moving text with the drag & drop hand. To move text from one location to another, select the text you want to move. Let the cursor hover at the edge of the selected text until it turns into a hand. Then click the mouse button and hold it down as you drag the hand, which is now gripping a text block, to the location where you want it. Release the button, and the text will automatically move there.

Copying text with the drag & drop hand. To copy text to another location, follow the instructions for moving text, but hold down the CTRL key when the cursor turns into a hand. Keep holding the key until the insertion point is at the location where you want the copied text to appear. Note, however, that the hand not only has a copy block, as it does when moving text, but it has a + sign on it, indicating that it's copying text instead of moving it.

Moving and copying text with the Cut, Copy, and Paste commands. You also can move and copy text with commands. To do so, select the text you wish to move or copy with your mouse. To move the selection, click the Cut SmartIcon (the one with the scissors) or select Cut from the Edit menu. To copy the selection, click the Copy SmartIcon (which has two text blocks on it) or select Copy from the Edit menu. Position the insertion point where you want the text copied or moved. Click the Paste SmartIcon (the one with the paste bottle on it) or select Paste from the Edit menu. The text will now appear where you indicated.

■ Check & Double-Check

Word Pro is equipped with some professional editing tools that help you create an error-free document. These include add-on programs to check your spelling, help you find the right word, correct bad grammar, and even double-check your formatting. We'll briefly tell you about each of these

tools. But because of our space limitations, you'll have to get more assistance from Word Pro's online Help.

Spell Check. The Word Pro Spell Check proofs a document, looking for words not included in its dictionary. When it finds unfamiliar or misspelled words, it highlights them for your correction or review.

You can activate Spell Check before you begin typing, while you're typing, or when you have finished typing a document. By beginning the program when you start typing, Word Pro lets you use a neat tool called SmartCorrect, which instantly corrects errors as you type them—as long as the errors and their corrections are in the SmartCorrect dictionary. (For example, SmartCorrect will change "teh" to "the" automatically.)

To activate Spell Check, choose Check Spelling from the Edit menu. The Spell Check bar will pop on-screen, above your document. It displays possible misspellings, offers suggestions for alternative spellings, and lets you choose to replace the word or skip it.

Find and Replace. To quickly locate a word in a document or to change a word you've misspelled throughout a document, you can use the Find & Replace feature. Besides searching for text, you also can find and replace paragraph styles or special characters.

To use Find & Replace, choose Find & Replace Text from the Edit menu. The Find & Replace bar will pop on-screen. You can type the word(s) you want Word Pro to find in the Find: box. Click the Find button to begin the search. To replace a word with another, fill in

the Find: and Replace With: boxes and click the Replace or Replace All button.

Thesaurus. Word Pro's thesaurus lets you find meanings and synonyms of a selected word. Just highlight the word and choose Check Thesaurus from the Edit menu.

The Thesaurus dialog box pops up. The box lists meanings and synonyms. Within it, you can choose to replace the word or look up meanings of replacements that Word Pro suggests.

Format Check. The Format Check tool proofs your document for common typing mistakes and inconsistencies in your presentation of information. This includes

checking for the consistent use of spaces between sentences, correctly indented bulleted lists, and proper insertion of certain special characters. When it finds inconsistencies, Format Check highlights them and gives you suggestions for correcting them. You decide whether you want to take its suggestions.

To begin Format Check, choose Check Format from the Edit menu. The Format Check bar will be displayed. From this bar, you can view formatting rules and suggestions and choose to implement them or skip them.

Grammar Check. As you can guess, Grammar Check is a program that proofs your document for grammatical errors. It analyzes sentence structure and offers suggestions for possible errors. Like the other proofing tools that come with Word Pro, you don't have to take its suggestions and can choose, instead, to ignore them and leave the text as you had it.

To begin the Grammar Check, choose Check Grammar from the Edit menu. This brings the Grammar Check bar on the screen. This bar lists possible errors, provides suggestions—with a button for more lengthy explanations—and lets you change your wording or skip the suggestion.

Now that you can organize, format, and edit your documents in Word Pro, you're ready to make them look even more professional by integrating drawings, graphics, and tables with your text. We'll cover the desktop publishing features of Word Pro next month. Don't miss it! ●

by Lori Beckmann Johnson

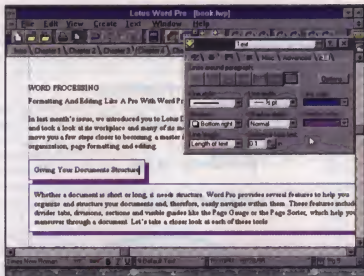


Figure 3: The Borders and Shadows tab of the Text InfoBox lets you place borders and shadows of any color around a paragraph.

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PageMaker 5.0

Creating Multiple-Page Flyers



last month, you advertised a basement sale through a flyer you created with PageMaker 5.0. The event was successful, and your local charity will be very blessed this Christmas.

You want to post a multiple-page flyer on the bulletin board to announce the success, thank donors and volunteers, and encourage participation from other churchgoers. You know how to work with text, but not with columns and graphics. It's time for new lessons.

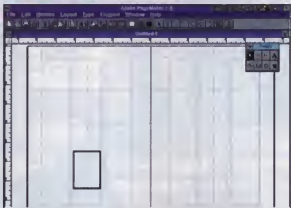
■ Setting Up

Choose the File menu's New command. In the Page Setup dialog box, choose a letter page with a tall orientation. You may use other sizes, but among non-custom pages, letter pages are the easiest to work with on-screen because of their size. Paper larger than a legal (8.5 x 14-inch) page cannot be outputted by most desktop printers and must be tiled (printed in pieces that are later trimmed and joined together like a puzzle).

■ Columns, Rulers & Guides

To define the number of columns for each page and the space between columns, select the Layout menu's Column Guides command. In spreads or facing pages, the number of columns are the same for each page. The Set Left and Right Pages Separately option in the Column Guides dialog box lets you enter the specific number of columns you want for each page.

If there are no vertical and horizontal rulers on-screen, go to the Layout menu's Guides and Rulers submenu. Select both the Rulers and Guides commands; checkmarks beside these commands mean they are activated. The zero point is the crosshair at the top left of the screen, right where the rulers intersect. To reset, drag the zero point to a desired spot, usually the upper-left corner of a page, graphic, or text block you want to measure or scale. To return to the default setting, double-click on the zero point.



PageMaker 5.0's guides, column guides, and rulers make it easy to scale, measure, and align text blocks and graphics.

To use guides, click anywhere on the rulers and drag the cursor onto the page. A vertical or horizontal blue line appears. To keep the zero point and guides from being accidentally reset, select the Zero Lock and Lock Guides commands from the Guides and Rulers submenu. Guides help align text and graphics.

■ Importing Text

You may type your stories directly into PageMaker or import stories that have been created with word processing software and saved in a PageMaker-compatible format. To do so:

1. Open the File menu and select Place.
2. In the Place Document dialog box, double-click on the needed text file in the directory.
3. The dialog box will disappear, and the cursor will change into a loaded text icon.
4. Decide where you want to start the text block, position the icon at that point, then click. Text flows to the bottom of the column or page, and the cursor becomes the pointer tool. If there is more text to place, a downward-pointing red arrow appears on the bottom handle of the text block.
5. To continue placing text, click on the red arrow. Again, the cursor turns into a loaded text icon. Position the icon at another starting point, and click. Keep doing this until there is no more text to place, or when the bottom handle is empty.

To import text faster, use the Layout menu's Autoflow command. The loaded text icon will have a curved arrow in it instead of tiny horizontal lines. Once you click on the page, all text is automatically placed, and PageMaker adds pages as needed. Autoflow is convenient when you have lengthy stories.

■ Importing Graphics

Sometimes, words are not enough to convey a message. This is where graphics help. Import graphics the way you import text:

1. Open the File menu and select the Place command.
2. In the Place File dialog box, double-click on the file you want. The cursor changes into an icon.
3. Position the icon on the page, then click.
4. If the graphic is too big, select it, and hold down the SHIFT key to resize a graphic proportionately as you drag the graphic's lower-right handle inward.

You can control the graphic's size beforehand. When the cursor changes into an icon, hold down the mouse button, and define a rectangular area by dragging the mouse in a downward diagonal stroke. Release the button, and the graphic will appear only in the defined area (see the left-hand page in the above graphic). Move the graphic by selecting and dragging it on the page.

When you are done laying out pages, save the file, and select the File menu's Print command to open the Print Document dialog box. The Copies option lets you specify how many copies you want printed. Selecting All in the Pages option lets you print the whole publication, while the From option lets you print only certain sections. Leave everything else on default, and click OK. Then prepare to see your vision on paper. ●

by Annetty P. Dakay

Microsoft Word 6.0

Generating Mailing Labels



ersatile Microsoft Word 6.x has so many neat features that it's difficult to think of it as just a word processor. Consider its label-making prowess.

Why use a typewriter or a pen to address an envelope when Word prints great-looking labels with just a mouse-click? Optimized for several popular-sized Avery brand labels, Word designs labels for envelopes, file folders, diskettes, name tags, rotary (Rolodex) cards, and so forth. You can be sure the finished product will have a professional look.

■ Creating A Label

Word's label-making tools are actually quite simple. Follow these steps to generate a single mailing label for a business envelope:

1. In an open document, select a name and address.
2. From the Tools menu, choose Envelopes and Labels.
3. In the Envelopes and Labels dialog box, click the Labels tab. Word copies and pastes the name and address you selected to the Address box, minimizing the possibility of data entry errors. You can easily modify this address or enter new information by pointing and clicking at the spot

where you wish to make changes, then begin typing.

To customize the way Word prints the item in the Address window:

1. From the Labels dialog box, choose Options.
2. In the Label Options dialog box, specify information about your printer (i.e., which tray will be used for sheet feeding).
3. Check the product number on the box of Avery labels you're using, then select it from the Product Number list in the Label Options dialog box. For example, if the Avery label you intend to use is product #5160 (an ideal address label measuring 1 x 2.63 inches), scroll down the Product Number list until you find it, then click to select it. Information about the chosen label appears in the Label Information window.

If you don't use Avery labels or if your favorite Avery label isn't listed, choose the Custom option to create a custom label template. Click Details to set template margins, label size, and distance between labels. You also must specify **vertical pitch** (distance from the top edge of one label to the top edge of the next label) and **horizontal pitch** (distance from the left edge of one label to the left edge of the next label) to ensure that Word prints correctly.

After identifying the necessary Label Options, click OK to return to the Labels window to complete label setup.

To print a single label, click the Single Label option in the print window. Word automatically prints to Row 1, Column 1 of the label sheet, unless you tell it otherwise. If this is the first time you're using a label sheet, don't make any changes to the Row and Column windows. If the label sheet you'll be using is missing labels, you can ensure that Word does not print to any of the blank spots by configuring the Row and Column settings.

NOTE: Partially used sheets of laser labels may not be "healthy" for your printer. If you find they

tend to jam, you may be better off printing an entire sheet, reserving unused labels for later or for use on a typewriter.

■ Fine-Tuning Print Jobs

You're now ready to print. Before printing to label stock, perform the following test:

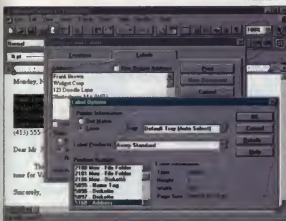
1. Insert a regular 8.5 x 11-inch sheet of paper into the printer.
2. Click Print.
3. Take the printed "comp" and place it over a sheet of blank labels. Sheet edges should align perfectly. Hold these sheets up to a light to see if the printer output is centered. If output isn't correct:
 - In the Labels window, select Options.
 - In the Label Options dialog box, click Details.
 - Make the necessary adjustments to the margins of your selected label. Word automatically makes those changes on the Custom label rather than the Avery template. Click Yes to save changes and run another test.
4. When the output is correct, insert a sheet of blank labels and click Print.

■ Return To Sender

The Labels window also has a Use Return Address option, which prints one label or a sheet of labels with the return address specified in the User Info window (found by choosing Options from the Tools menu, then clicking the User Info tab). However, follow all the setup and test procedures outlined above before printing.

To change default Return Address information, enter the data that you want on the return address label. When you click Print, you can save your changes as the default return address before the information goes to the printer. To save a label or a sheet of labels so that it's always available, click New Document in the Labels window. You can adjust typeface, type size, and type style by choosing Select All (Edit menu) and making the appropriate choices from the relevant drop-down menus. ●

by Carol S. Holtzberg, Ph.D.



To ensure that Word outputs a perfect label, use standard Avery labels. You can identify labels by Product Number in the Label Options dialog box.

Microsoft Excel 5.0

Introduction To Formulas



last month, we began creating an expense report in Excel 5.0. Although our form looked complete when we finished, the timesaving "magic" won't occur until the spreadsheet can calculate your expenses. We do this by adding formulas, which we will begin exploring here.

What Is A Formula?

Formulas tell a spreadsheet program how to calculate a value for the cell in which they appear. They can give simple directions, such as "add the values in these two cells and enter the total here" or more complex instructions, such as "add the values in this column, multiply the total by three, then divide the answer by 6.754 and display the result."

You can recognize an Excel formula because it always starts with an equal sign. Normally, you'll see the formula when you're editing the cell in which it's located. Otherwise, you'll see the value it produces.

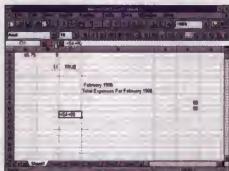
When you begin working with formulas, most will be simple formulas. These formulas combine constant values (numeric data or a text value) and cell references (i.e., cell B2), manipulating them with operators, which specify the operation you want performed (i.e., addition). For example, the formula `=C8/20` uses a cell reference of C8, operators for division (/) and subtraction (-), and the constant values of 20 and 100.

With continued use, you will discover that formulas can use references, functions, text, and user-defined names to perform tasks and manipulate data.

Understanding Operators

There are three types of operators: arithmetic, comparison, and text.

Arithmetic operators perform basic mathematical operations manipulating numeric values and producing numeric results. These operators include addition (+), subtraction (-), division (/), multiplication (*), percent (%), or exponentiation (^). Examples include `=7*3^25%`, which



There are three types of formula operators: arithmetic, comparison, and text. We've shown the results of several of these formulas here. Looking above the main part of the spreadsheet window, you can see the Formula Bar; click the green checkmark to accept the formula in the data entry area.

produces a value of 85.75, and `=18+9`, which produces a value of 9.

Comparison operators compare two values and produce a logical value of TRUE or FALSE. Operators include equal (=), greater than (>), less than (<), greater than or equal to (>=), less than or equal to (<=), or not equal to (<>). An example is `=B3>10`, which produces the logical value TRUE if the value in cell B3 is greater than 10 and the logical value FALSE if the value is less than 10.

Text operators join two or more text values into one combined text value. The operator is an ampersand (&) and it connects text values. For example, if cell D6 contains the text "February 1996," the formula `=Total expenses for"&D6` would yield the text value "Total expenses for February 1996."

Order Of Operations

When writing your formulas, you'll want to look at the order of your operations. Following mathematical rules, Excel performs operations according to an operation hierarchy. Operations with the same ranking are performed from left to right. Following is Excel's ranking of operations:

- Negation (when it comes before a number, such as -5)
- % Percent
- ^ Exponentiation
- * and / Multiplication and division

- + and - Addition and subtraction
- & Text joining
- = < > <= >= <> Comparison

To alter the order in which Excel evaluates these operators, use parentheses to group expressions in your formulas, just as you did when doing algebraic equations. When parentheses are present, Excel first evaluates the expressions within parentheses and then uses those values to calculate the formula's result.

For example, the formula `=8+10*5` produces the value 58, but `=(8+10)*5` would produce the value 90.

Entering Formulas

Now you can begin entering formulas into your spreadsheets. This is as easy as entering other data in Excel.

First, activate the cell into which you want to enter the formula by clicking it. Then type the formula. As soon as you do so, the Formula Bar will appear above your spreadsheet. The cell reference is at the far left of this bar. At the far right is the entry area, where you insert and edit your formulas.

Between these areas are three one-click commands. The first, a red X, cancels a cell's entry. By clicking it, you clear the contents of the cell. Just start typing your new entry. The next, a green checkmark, accepts the formula in the entry area and enters it in the cell. And the last, an fx, displays the Function Wizard dialog box. Excel comes with built-in functions that you can add to your formulas. The Function Wizard helps you select these functions and correctly assemble the arguments. (We'll cover this feature in a different Quick Study.)

Once you've accepted the formula by clicking the checkmark on the Formula Bar or pressing ENTER, the value of the formula will appear in the cell, but the formula will still appear in the Formula Bar's entry area.

Now that you understand the basics of formulas, we can begin entering them in our expense report spreadsheet. That's what we'll do next month. See you then! ●

by Lori Beckmann Johnson

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Quicken Deluxe 5.0

Scheduling Recurring Payments



If you're like most people, you put off that most loathsome of tasks—bill-paying. Unfortunately, it's difficult to remember the due date of each and every bill, and you run the risk of mailing a payment late when you let the bills accumulate.

Quicken from Intuit ensures you'll never make a late payment again (as long as your bank account balance agrees). When you team Quicken's financial calendar and recurring payment features, you can have the program remind you of upcoming monthly payments a few days before they're due.

■ Electronic Calendar

To open the calendar from the Quicken HomeBase, click on the Activities menu and select the Financial Calendar command. (You also can use the CTRL-K keyboard shortcut.)

The Quicken financial calendar looks exactly like a desktop paper calendar. You can view one month at a time, switching between months by clicking on the Prev or Next buttons along the top of the calendar.

If you've already entered some transactions into Quicken's checkbook register, you'll see some entries listed inside the calendar. The entries are located on the date of the month on which they were paid. Double-click on a particular date to open its Transactions Due window, in which each payment or deposit you made on that date will be displayed. To edit one of these entries, click on it, and then click the Edit button. You will see the Edit Register Transaction window, which contains the details of the selected transaction. You now can make any desired changes in the various fields. To save the changes (and have them made in the checkbook register), click the OK button. To cancel any changes you made, click the Cancel button.

■ Scheduling A Payment

Recurring payments (or deposits) are those you make continually after a specific time period, such as a house payment or a paycheck deposit. These are the types of payments Quicken can help you remember.

To schedule a recurring payment, you have two choices. The first—and easiest—method requires that you have the payment information already entered into the checkbook register at least once. If so, you'll see the payment contained in the listing on the right side of the Financial Calendar window.

Click on the payment you want to schedule, and hold down the mouse button. Now drag the payment onto the calendar date on which you want to make the payment, and release the mouse button. In the New Transaction window that opens, you will see the information you have already entered in the checkbook register. We're interested in the Scheduled Transaction section at the bottom of the New Transaction window.

In the Frequency box, you can choose how often the payment occurs, ranging from weekly to yearly. (Click on the button containing the underlined arrow to gain access to the Frequency list.) In the Register Entry box, you can choose to have the re-

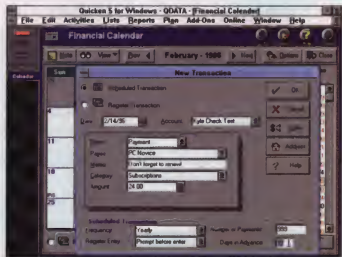
curring payment entered automatically into the checkbook register, or you can have Quicken prompt before entering it. If you're having Quicken remind you of upcoming payments, you will want to select Prompt Before Entering. In the Number Of Payments box, you can select how many payments you must make. If you're paying off a loan, for instance, you might want to enter the exact number of payments you have remaining. In the Days In Advance box, you can specify when Quicken should alert you to the upcoming bill. When you have made all of the editing changes, click the OK button to save them.

If you're entering a recurring payment that isn't in the list on the right side of the window, you will have to follow the second method. Double-click on the date on which you want the payment to occur, and then click New in the Transactions Due window. You will again see the New Transaction window, but you will have to enter all information, such as payment amount, payee, and category, in addition to the information in the Scheduled Transaction section.

To see your scheduled recurring payments, you can scroll through the calendar months. Each recurring payment should be listed on the date of the month you have selected.

The next time you start Quicken, if you have any scheduled payments due, Quicken alerts you immediately through the Scheduled Payments Due window. Click on the payment you want to enter into the checkbook register, and then click the Record button. If you need to make a change to the payment, highlight it, and click the Edit button. Click OK to save your editing changes, and then click on Record to enter the payment. ●

by Kyle Schurman



By creating a recurring payment, you can make Quicken remind you about an upcoming bill.

Lotus 1-2-3 5.0

Linking Data To Geographic Maps



ired of boring bar charts? Lotus 1-2-3 Release 5 for Windows lets you link worksheet data with geographic maps. For example, you can display sales information for countries throughout the world by linking your sales data to a world map and producing a visual display that conveys your information differently than a bar or line chart.

The maps display the information according to a set of predefined geographic regions, depending upon the map you use. Up to six categories of data can be shown on the map, with each category represented by a different color or pattern.

■ Creating A Map

Maps are quickly created from a selected range of data. Before entering your information, you need to know the two-character map code for each geographic area used in the map. The codes for individual states in the United States match the abbreviations used by the postal service, but you will need to refer to the map code files for other countries and regions. These code files are contained in the 123R5W\MAPDATA subdirectory. One of the more useful files is World.wk4, which lists the codes for countries throughout the world. The files also contain demographic information, such as birth and death rates, population statistics, and fertility rates.

When you select a range to map, the left column should contain the map code for each location. The second column should contain the data for each location. For example, column A would contain the abbreviations for states, and column B would contain annual sales figures for each state.

Highlight the range to map (in our illustration, we highlighted cells C6..D17). Open the Tools menu, select Map, then Insert New Map. If

more than one map is possible for the codes you have listed, a dialog box will appear from which you can select the appropriate map and choose OK. The cursor will change to look like a miniature globe. Click an empty cell where you want the upper-left corner of the map to appear.

■ Modifying A Map

You may need to change the map once it has been created by changing colors, text, or the value scale represented in the map legend. Click once on the map to select it. Then select Tools, Map and use the menu items to make changes.

Tools, Map, Colors, and Legend lets you change the colors and scale used in the map legend. Tools, Map, Patterns, and Legend changes the patterns and scale. Both patterns and colors can be used on a map. For example, you could use color to show sales volume and patterns to indicate if sales are up or down.

Maps can display data for up to six categories; the number shown can be changed to suit your needs. Using our illustration as an example, you could modify the legend so that it only has two categories (referred to as "bins"): sales less than \$1 million and more than \$1 million. To do so:

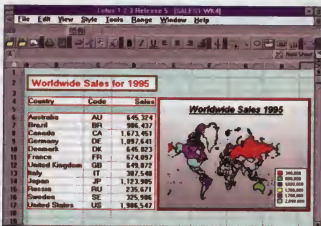
1. Select Tools, Map, Colors, and Legend.

2. Select "Value Is Upper Limit."
3. Change Values and Legend Labels to Manual.
4. Delete the contents of Bins 3 through 6.
5. Change the Value of Bin 1 to 1,000,000 and Bin 2 to 2,000,000.
6. Change the Legend for Bin 1 to <1,000,000 and for Bin 2 to >1,000,000.
7. Click OK to save the changes and return to the worksheet.

We used Tools, Map, Ranges, and Title to change the title of our map to "Worldwide Sales 1995". You also can use that dialog box to add pin characters to symbolize items such as regional headquarters, and to change and add range assignments and map types.

Right-click the map and choose Lines and Color from the pop-up menu to change the map's outline and background color. Select Edit Object from that menu (or double-click the map) to display the Map Viewer. From there, you can zoom in and out of areas of the map to view it in different ways. Right-clicking areas of the map displays different pop-up menus. To change the size, font, and color of the map title, right-click the title, select Font and Attributes, and make your selections. To add a map overlay, select Map, Choose Overlay and choose from the list of possible overlays. An overlay can be removed by selecting Map, Remove Overlay. To return to the worksheet, choose File, Exit.

Displaying and analyzing spreadsheet data geographically can add a new dimension to your data. In addition to maps of the world by country, there are maps of the United States by state, Canada by province, Mexico by estado, Europe by country, Japan by prefecture, Australia by state, and maps of more than 1,500 cities. More maps and demographic information are available and can be ordered if needed. ●



Lotus 1-2-3 5.0 lets you link data to geographic maps so that you can convey information, such as regional sales figures, in a more meaningful way than simple bar or line charts.

by Diane K. Walkowiak

Of Mice & Pens:

Installing Input Devices

Your computer probably came equipped with the standard input devices: a keyboard and a mouse. At

some point, perhaps because of comfort or job necessity, you may find that you'd prefer a different mouse or a different type of input device altogether. In this article, we explain how to add smaller input devices to your system including mice, trackballs, touchpads, light pens, and pointing sticks. (Other types of input devices include keyboards, joysticks, scanners, and touchscreens.) With the exception of the light pen, all of them install in the same manner, using the same kinds of ports. After a brief description of the various input devices, we'll go through the steps for the similar input devices first and then those for the light pen,

■ Types Of Input Devices

Mice. Experienced PC users can skip the next couple of paragraphs. They already know that next to the keyboard, the mouse is the most familiar input device. Most mice look alike, but there are cordless mice and tethered versions in other shapes. The most familiar type of exotic mouse may be the pen-shaped mouse, which is designed to be more comfortable for people used to working with writing instruments than computers. Pen-shaped mice, not to be confused with the light pens explained below, have a roller ball in the tip.

There are also novelty mice shaped like objects such as cars or real-life mice.

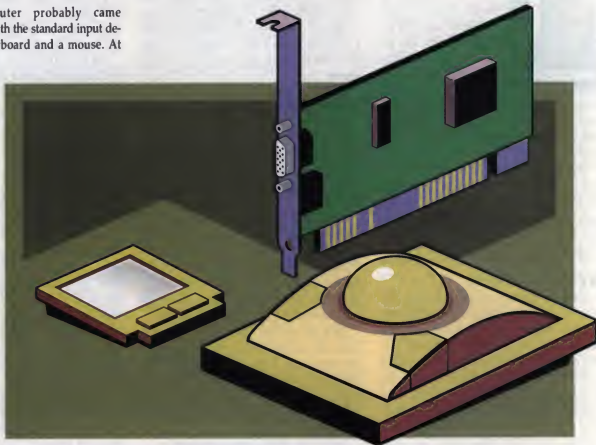
While the mouse's left button is used for general purposes, the right button is usually used only for special functions. Under the Windows 95 and OS/2 Warp operating systems, the right mouse button is used more often. Left-handed users can swap the functions of the buttons for easier use.

Trackballs. Trackballs look like mice turned upside down. Instead of moving the entire unit, your fingers or thumb move the roller ball on top of the device. Trackballs still have buttons like those on mice. The TrackMan Vista from Logitech that we installed had three buttons, one for the thumb and two for the last two fingers of the hand. The thumb button is used like the left button

on a mouse. The included software lets users assign shortcuts, such as double-clicking, to the other buttons.

Touchpads. Touchpads use the most basic pointing device of all—your finger. The movement of your finger on a touch-sensitive pad directs the movement of the on-screen cursor. To click something, you tap the pad. The touchpad we used, the Desktop GlidePoint from Alps Electric, has three buttons to which the user can assign functions, much as you would with a trackball.

Light Pens. Light pens, instead of being used on the desktop, are used in contact with the computer screen. The model we used, the PenDirect 2000 from FTG Data Systems, could be used instead of a mouse or in conjunction with one.



Pointing Sticks. These devices, which have become common in portable computers, look like pencil erasers and function much like joysticks, where you move the stick in the direction you want the cursor to go. The main differences between joysticks and pointing sticks are their size and the fact that you use only one finger to move the pointing stick. While pointing sticks are embedded in the keyboards of portables, they can be purchased for the desktop in mouse-shaped devices. The model we used for this article, the DeskStick from Interlink Electronics, has two buttons, one on either side of the device, that function like mouse buttons.

■ Getting Ready

There are some preparatory steps to take, no matter what type of device you're installing. The first step is always reading the instructions included with your new input device before beginning. Among other things, the manual will list the system requirements of the device you've purchased and the parts that should be included in the package.

NOTE: This article is meant to serve as a general guide. Our instructions will be based upon the products we installed as examples of the different types of input devices. The instructions will vary somewhat among products. Refer to the manual included with the input device you have purchased, using it in conjunction with this article, instead of replacing the manual with our directions.

■ Installing A Bus Expansion Board

A few input devices will require the installation of a bus expansion board, either because of their requirements or because all of your existing ports are used for other devices. These boards, which are installed in bus expansion slots inside your computer case, create new ports at the back of the computer for use with the input devices.

NOTE: Before handling the board or opening your computer, touch the metal computer case while the computer is plugged in to ground yourself, eliminating any static electricity on your body.

Before installing the board, you must set the **jumper**s. Jumpers are groups of small metal pins, some of which are covered with plastic blocks. Changing which pins are covered by the blocks alters settings such as IRQ (hardware interrupt) levels. These settings, which control how peripherals receive service from



Touchpads such as the Desktop Glidepoint from Alps Electric let your finger do the painting.



Desktop pointing sticks such as the DeskStick from Interlink Electronics evolved from those embedded in portable keyboards.

the microprocessor, must be correct for your input device to work properly with the computer and its peripherals. The instructions with the input device will explain the various settings and how to change them if they conflict with another device.

NOTE: You should always turn off the power to your computer before working on it. We recommend unplugging the power cord, too, as an extra precaution.

Once you have the case open, the first step is selecting the expansion slot for the board. Once you've selected the slot, use a screwdriver to remove the expansion slot cover.

Keep the screw from that cover; you'll need it to secure the metal retaining bracket of the board. Line up the board's connector with the slot socket and press the board firmly into place, rocking the board from end to end if necessary. Then secure the board with the screw from the expansion slot cover. You now can put the computer case back together, but don't plug in any cords or attempt to turn on the system.

■ Locating The Port

Locate the port you will be using for the device. If you're installing a new device to use

instead of your original mouse, unplug the mouse so that you can use that port for the new device. If you've installed an expansion board, the port will be on that board but still will be accessed at the back of the computer with all of the other ports. Most input devices are designed to use either a PS/2 port or a serial port. A few, however, only fit into one and come without adapters. Check to be sure that your new device is compatible with an available port on the back of your computer.

PS/2 ports (also called mouse ports) are small and round; the connectors that fit into them are round, with six pins. Serial ports are trapezoidal, and those used for input devices generally have nine pins. The connectors for serial ports often have thumbscrews to secure the connection of the cable to the computer. These screws can be turned by hand, so they don't require a tool to tighten them.

Most input devices are designed to use one of the two ports described above and come with an adapter for the other type of port. Some input devices also offer adapters that will let you plug them into a 25-pin serial port; these adapters aren't included with the package but can be requested from some manufacturers, including Logitech.

If necessary, connect the adapter to the device's cable at this time. This is done by matching the end of the adapter with the cable connector, pressing the two connectors firmly together, and tightening thumbscrews if there are any.

Next, connect the cable (with adapter attached, if necessary) to the port on the back of your computer. Again, as with the adapter, match up the connector and the port so that any pins line up correctly, and press in firmly.

NOTE: The connector will fit in the port only one way. If it doesn't seem to fit, don't force it. Look closely at the connector and port to be sure they are compatible and that you have them lined up properly. In most cases, it is very easy to determine how to line them up. Many connectors have arrows or flat sides indicating the top.

Once you have plugged the device into its port, you're ready to reconnect all of the cables and turn your computer back on.

■ Installing Software

Some input devices will require software device drivers. Many will use a driver already in your operating system; your manual will tell you whether you need to install a driver. If

You may need to adjust some settings to make your new input device work the way you prefer.

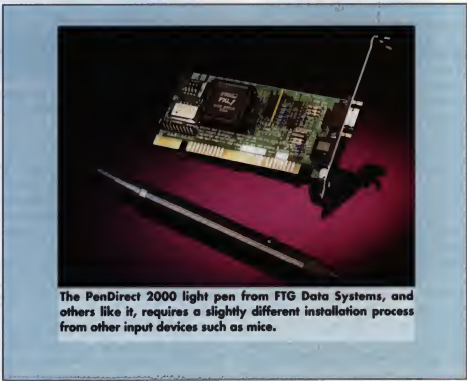
you do, the instructions will be included with the device, and the installation is usually guided by on-screen directions for each step. In Windows 3.1, you usually begin the installation process by opening Program Manager's File menu, choosing Run, and typing an installation command such as `a:\install`. The specific command will be given in your manual. In Win95, software is installed by left-clicking the Start button, pointing to Settings, left-clicking Control Panel, and then double left-clicking the Add/Remove Programs icon and following the prompts. Most input device drivers also can be installed for DOS without Windows; to do this, you usually insert the diskette containing the software, and type `a:\inst_DOS` at the DOS prompt and press

ENTER. The installation program will begin, and from there you just follow directions.

After installing the software, no matter which operating system you're using, you'll need to restart your computer for the new settings to take effect. Some installation programs perform a reboot for you; others will prompt you to do it.

■ Adjusting Settings

You may need to adjust some settings to make your new input device work the way you prefer. For example, the tracking speed (how much the cursor moves in reaction to your use of the input device) may need to be adjusted if a device is significantly more or less sensitive than the one you've used before. Another change some users, especially those who are left-handed, will want to make is switching the buttons so that the majority of the actions use the right mouse or trackball button instead of the left. If you do that, you will need to remember to use the opposite button from the one given in a direction. For example, if a direction in a program tells you to click with the left mouse button, you'll need to use the right one instead. Also, some devices, such as the trackball we installed, let you choose functions for various buttons.



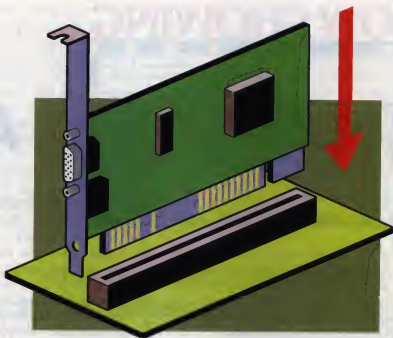
The PenDirect 2000 light pen from FTG Data Systems, and others like it, requires a slightly different installation process from other input devices such as mice.

To adjust these settings in Windows 3.1, go into the Control Panel in your Main program group. Open the Settings menu, select Mouse, and make the changes you want. In Win95, you get to the Control Panel by left-clicking Start, pointing to Settings, and then choosing Control Panel. From that point, the process is the same.

If the input device you're using required software installation, there may be a control panel for that specific device. If this is the case, as it was with the DeskStick we installed, the custom control panel will be found in your Control Panel program group. These custom control panels offer the same kind of options as the mouse control panel that is part of Windows: speed/sensitivity, double-click speed, acceleration, and button swapping.

■ Installing A Light Pen

The light pen we installed, the PenDirect 2000 from FTG Data Systems, required the installation of a light pen board, which came with the pen, in an ISA (Industry Standard Architecture) bus expansion slot. Installing this card is similar to the installation of a bus expansion board for an input device if you don't have open ports. First, make sure the base I/O (input/output) address through which the computer will talk to the card is different from those used by other cards in your computer. (To check the base I/O address of a board, check its manual.) If



A few input devices require a bus expansion board, which fits in a slot inside your computer.

there is a conflict, the manual should offer alternative settings and explain how to set the switches on the new board to one of these options. In the case of the Pen Direct 2000, you manually move four switches to on or off settings, based on a chart for various addresses. These settings are adjusted

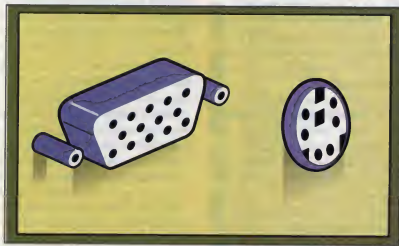
prior to installation of the card. You also may need to adjust the IRQ level jumper, as described in the section on installing expansion boards.

The procedure for installing the board is also the same as described above. For this particular board, however, you should install it in the expansion slot closest to the video card so that the cable to connect them will reach.

The next step is to connect the cables. The pen we used had two: a three-way serial cable to connect the light pen board to the monitor and the video card, and a cord with a connector like a telephone cord's to connect the pen to the board.

After the cables are connected, you can turn your computer back on and install the software. The software for a light pen will install in the same manner as the drivers for the other input devices. The manual will provide the command you should type to begin the setup process, and from there you'll be prompted by on-screen instructions. ●

by Diana K. McLean



Most input devices come ready to plug into round PS/2 ports (right) but also have adapters to fit serial ports (left).

NOW SHOWING

TUE 04-11-1995
17-15:52.20 C:\

Using Ansi.sys

You can compute happily for years without knowing that Ansi.sys even exists, much less ever actually using it. But once you discover this device driver contained in DOS, you may find yourself experimenting with some rather creative options if you do much work with DOS itself.

Ansi.sys is a device driver (software that lets the computer communicate with hardware) that supports the American National Standards Institute (ANSI) terminal emulation. This means you can use it to change some of the things about your PC that you probably thought were etched in stone. For example, you can change background and foreground colors for your screen, add hotkeys for often-used DOS commands, change the screen width or type, change the prompt, and even change the functions of the keys on your keyboard.

The caveat is that the changes can be made only for DOS; remapping the function keys won't affect their use in other applications. When you load an application—*WordPerfect* or *Quattro Pro*, for example—that application runs normally, regardless of the changes you made for DOS. When you leave the application and return to DOS, the changes will be apparent.

Generally, Ansi.sys is considered an archaic device driver. Most people don't work much in DOS anymore, preferring to take advantage of the functions of Windows, OS/2, other graphical user interfaces (GUIs), or a variety of utilities to accomplish many of the DOS functions without having to write the actual commands. For example, checking

a diskette directory requires only a few mouse clicks in Windows, and it's

equally easy in utility programs such as *Norton Commander*.

"Even in DOS, very few applications have ever made use of Ansi.sys," says Harry Sutton, a Microsoft Most Valued Professional who is active in CompuServe's Microsoft forum. "Ansi.sys was valuable a few years ago, when people had to create their own menu programs in batch files. It also was valuable to some programs that wanted to change screen colors, etc., but those days are fading rapidly into the dim recesses of history."

If, however, you still use DOS by itself, like learning about it, or find yourself using DOS commands frequently, installing Ansi.sys may be worth your while. It can, after all, streamline some functions, or at least make the DOS prompt itself more useful and appealing.

■ Cautions & Limitations

"When redefining keys with Ansi.sys, it is possible to define something very destructive," Sutton says. A particularly bad example would be programming a key to format the hard drive. This command is so destructive that it is called an ANSI Bomb. Other ANSI Bombs are sometimes hidden in a text file, such as a Readme file, or are output by a program. The Bomb would be executed unnoticed until it was too late. PKSFANSI (PK Safe ANSI), a utility that

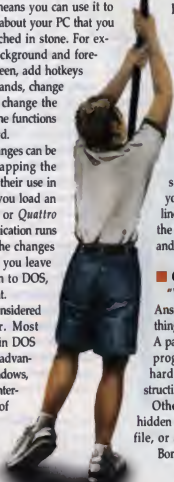
comes with the data compression program PKZIP and can be downloaded from online services, prevents keyboard reassignments while allowing other ANSI commands through.

Although Ansi.sys key assignments can be altered, they never can be removed from your system. So, if you assign to the F11 key the command to list the directory of drive A.; change your mind and reassign that function to F12, Ansi.sys merely makes another assignment that takes precedence.

This results in much less room for new key definitions. With Ansi.sys's small, 200-byte buffer, it's wise to double-check your definitions to ensure that you don't occupy too much buffer space with erroneous commands. Because one character equals one byte, it takes only a few commands to fill the buffer, which is where commands go in preparation for execution. As a result, if the buffer has many errors, it takes longer for the machine to get to the correct commands.

Ansi.sys also runs slowly, which may be noticeable on slower machines. (Slow, of course, is relative.) Its slow speed is caused by the way it executes commands, routing output through the BIOS rather than directly to the screen. Routing output for commands through the BIOS works well, but it adds another step to the process, further delaying any results. Ansi.sys also uses an interrupt handler that traps key presses to interpret them and traps characters displayed to the screen. (BIOS, or Basic Input/Output System, is the set of routine that works with a computer system's hardware to support data transfers among various elements of a system, such as the monitor or disk drives.)

More important than speed, though, is the fact that DOS commands can't "wrap" to the next line on-screen. This 127-character limitation of the DOS command line isn't a problem for simple commands, such as changing a prompt or key mapping. In other instances, however, more complex DOS commands can challenge this limit. "That's a hard limit for all



DOS commands and applies to ANSI escape sequences as well," Sutton says.

■ Getting Started

Not every version of DOS offers Ansi.sys, and the commands and codes may vary among versions and manufacturers. This article is based upon codes and commands for MS-DOS 6.22. Check to see whether your version offers Ansi.sys by looking at your DOS manual under "Configuring Hardware Devices." This section lists the device drivers available to that version of DOS and doesn't give much information. If Ansi.sys isn't listed, you don't have it.

Documentation for earlier versions of DOS, such as 5.0's User's Guide and Reference Manual, have an entire section about ANSI Escape Sequences (Chapter 11 for MS-DOS 5.0), Sutton says. "It explains the concept quite well. However, the MS-DOS 6.x User's Guide and online help don't have nearly as much information. This reflects the fact that Ansi.sys is becoming less and less useful." In fact, Microsoft reports no plans for any further edition of DOS, so Ansi.sys will be phased out as DOS is replaced by Windows 95.

For online information, at the C> prompt, type:

help ansi.sys

That command will produce several screens of information describing Ansi.sys, including character codes for every symbol and combination of keys on the keyboard. It also offers examples and information about how to enter those codes into the computer so they make sense and how to undo mistakes and return your screen and keyboard to its original parameters. Try some of the examples before working on your own. (If nothing else, it reduces the fear of "tampering" with your PC and assures you that what is done can be safely undone.)

A list of DOS commands is available by typing **help dos**. Likewise, prompt commands and other valuable information are available the same way, or by typing **help** at the DOS prompt and selecting the command for which you need information.

Now decide what you want to do. Write your proposed changes on a piece of paper, double-check them, and write what you need to do to reverse your changes and return your system to its usual parameters. Consider this a safeguard that takes a few minutes of extra time now but can save hours of frustration later if you do make a mistake.

Printing the Help Ansi.sys file is an excellent idea. Simply use your mouse or arrow cursor to pull down the File menu and choose Print. (You may need to configure your printer to print, especially if you use Windows or configured your printer through your primary application, such as a word processing program. To configure your printer to print this file, use your mouse or cursor to choose the Configure Printer option and select the proper port for your printer.) You also can save this file to a diskette.

■ Adjusting Config.sys

Now that you know what you want to do, exit the Help Ansi.sys file. The C>

prompt will return. Type **edit config.sys**. Any changes you make using Ansi.sys that you want to last must be added to the Config.sys file.

NOTE: If you want to use the changes for only a short time, you can type ANSI commands at the DOS prompt. These commands are not remembered by the system and are lost when the computer is shut off.

Config.sys is a file that contains commands that configure the computer's hardware components, including the keyboard, monitor, mouse, and printer. The commands in Config.sys are carried out before any other commands in the PC, and are carried out each time you start the PC, and only when you start the PC.

Ansi.sys Keyboard Codes

KEY	CODE	KEY	CODE
F1	0:59	G	103
F2	0:60	H	104
F3	0:61	I	105
F4	0:62	J	106
F5	0:63	K	107
F6	0:64	L	108
F7	0:65	M	109
F8	0:66	N	110
F9	0:67	O	111
F10	0:68	P	112
F11	0:133	Q	113
F12	0:134	R	114
HOME (num keypad)	0:71	S	115
UP ARROW (num keypad)	0:72	T	116
PAGE UP (num keypad)	0:73	U	117
LEFT ARROW (num keypad)	0:75	V	118
RIGHT ARROW (num keypad)	0:77	W	119
END (num keypad)	0:79	Y	120
DOWN ARROW (num keypad)	0:80	Z	121
PAGE DOWN (num keypad)	0:81	1	49
HOME	(224;71)	2	50
UP ARROW	(224;72)	3	51
PAGE UP	(224;73)	4	52
LEFT ARROW	(224;75)	5	53
RIGHT ARROW	(224;77)	6	54
END	(224;79)	7	55
DOWN ARROW	(224;80)	8	56
PAGE DOWN	(224;81)	9	57
INSERT	(224;82)	0	48
DELETE	(224;83)	=	45
BACKSPACE	8	-	61
ENTER	13	[	91
TAB	9	]	93
A	97	:	59
B	98	'	39
C	99	.	44
D	100	,	46
E	101	/	47
F	102	.	96

In order to reprogram keys with Ansi.sys, you must know the codes Ansi.sys uses to recognize each key you wish to change. Here are some of the keys for which you can re-assign commands. Note how examples in the main story use some of these codes.

The Right Look

These are a few of the codes you'll use in *Ansi.sys* when setting the appearance of your system. Again, note how examples in the story use some of these codes.

TEXT ATTRIBUTES		FOREGROUND COLORS		BACKGROUND COLORS	
0	All attributes off	30	Black	40	Black
1	Bold on	31	Red	41	Red
4	<u>Underscore</u> (on monochrome display adapter only)	32	Green	42	Green
5	Blink on	33	Yellow	43	Yellow
7	Reverse video on	34	Blue	44	Blue
8	Concealed on	35	Magenta	45	Magenta

Be careful here. Although most *Config.sys* commands can be inserted in any order, the order of the device commands—which you use with *Ansi.sys*—is very important because the commands enable the devices that are needed by other drivers. Device commands are those commands that begin "Device=".

Device drivers should appear in *Config.sys* in the following order:

- Himem.sys, if the PC has extended memory
 - The name of the expanded-memory manager, if the PC has expanded memory
 - Emm386, if the PC has a 386 or faster processor and extended memory
 - Any other device driver—including *Ansi.sys*
- To add *Ansi.sys* commands to the *Config.sys* file, the proper syntax is:

```
device=[drive][path]ansi.sys [/X] [/K] [/R]
```

The /X parameter reprograms extended (101-key) keyboards. The /K parameter tells the PC to treat a 101-key keyboard like an 84-key keyboard, and /R adjusts line scrolling to improve readability when *Ansi.sys* is used with screen-reading programs, such as those available for users with impaired vision. The /R parameter won't be used unless you need special screen readers, but the other two should be included.

Before adding commands to your *Config.sys* file, create a startup diskette as a fail-safe. That way if your system's configuration is hopelessly disrupted, you can start the computer with the diskette and return to where you started.

First, format a diskette. If your target diskette is in the A: drive, at the C> prompt, type:

```
format a: /s
```

After the diskette is formatted, type:

```
copy c:\config.sys a:
```

at the C> prompt. This copies the *Config.sys* file from the C: drive to the A: drive. Then copy the *Autoexec.bat* file by typing:

```
copy c:\autoexec.bat a:
```

at the C> prompt. Now that your system is protected in the case of any serious mistakes, you can experiment safely with *Ansi.sys* commands.

■ Escape Codes

Escape codes begin *Ansi.sys* commands that define a key or adjust screen color or mode. The escape character lets the key or screen escape the original definition. Changing a prompt doesn't require an escape code.

The easiest way to enter an escape code is:

```
prompt $e
```

The escape code must be followed by the left bracket ([) and the ANSI codes that tell the PC what you want to do. Other methods of entering escape codes are available with some editors. For example, the MS-DOS EDIT command understands pressing CTRL-P, followed by the ESC key as a literal escape character (ASCII Code 27).

■ *Ansi.sys* & Prompt Syntax

When using PROMPT without escape characters, simply enter prompt \$ and the letter of the command you wish to use. These commands, called *metastings*, are listed in the DOS manual and can be called on-screen by typing *help prompt* at the DOS prompt. These codes are not case-sensitive, so Prompt \$t and Prompt \$T are executed identically.

For actual ANSI commands, uppercase and lowercase type are *not* interchangeable. Also, make sure you use backslashes (\) and slashes (/) appropriately. Interchanging them is unlikely to harm your system, but your commands won't be executed if they are

wrong. Within ANSI syntax, semicolons are used to separate functions.

The ENTER command can be written as 13. This code, Sutton says, is needed only if you want to put a carriage return into a string you're defining. It's rarely needed. Omit it when you don't want an ENTER command at the end of the line; use it when redefining a key. If you omit ENTER in a key definition command, the typed command will appear on-screen, and DOS will wait for you to press the ENTER key before executing the command.

Now that you know the basics, let's make a few changes, starting with something simple.

(NOTE: These commands are accurate for MS-DOS 6.2 and 6.22. Other versions of MS-DOS and other manufacturer's versions of DOS may have different commands. Use the commands and codes assigned by your own computer's version of DOS.)

Changing Prompt messages is one of the simplest changes to make because it follows simple commands from the Help Prompt file and doesn't use the complex syntax of other *Ansi.sys* commands. Type *prompt \$* and the appropriate code. A list of codes is available in DOS by typing *help prompt*. Try changing the standard C: prompt to something more useful. To change the prompt to the current drive and path, type *prompt \$p* and press ENTER.

This provides the ANSI escape code (\$) used by the Prompt syntax and tells the computer to display the current drive and path as the standard prompt (P).

To display the current date on one line and the current time on another, type:

```
prompt $d$_$t $p$g
```

In that command, \$d means "display the date," \$_ means "enter a carriage return," \$t means "display the time," the space means "display a space," \$p means "display the current line and path," and \$g means "display >".

As a result, the prompt now displays as:

```
Tue 04-11-1995
17:15:52.20 C>
```

A better date and time prompt can be created with

```
prompt $d$,$t$hh$hh$hh$hh$ $p$g
```

Each \$h\$ means "erase back one character." The prompt will now display as:

```
Tue 04-11-1995
17:15 C>
```

The time may include an a.m. or p.m., depending on your system's CMOS Setup.

Changes such as remapping keys or altering the screen require more involved syntax changes and follow the process outlined in the Help Ansi.sys file, which contains escape sequences and key codes. You still begin the command with Prompt, followed by the \$E[syntax that is described in your on-screen documentation. For example, to change the screen color from white type on a black screen to green type on a black screen, type:

```
prompt $E[1;32;40m$P$g
```

To map the F2 key to list a directory, type:

```
prompt $E[0;60;"dir";13p
```

In this example, the 0;60 identifies the F2 key, "dir" tells it to display the directory, and 13 tells it to add a carriage return. The "p" is the standard string ending for key remapping commands. If the "13" were omitted, F2 would display the entire command on-screen and wait for you to press ENTER.

To assign a DOS command—in this example, copying all files and subdirectories from drive A: to drive C:—to the F2 key, type:

```
prompt $E[0;60;"xcopy a: b:/s/e";13p
```

For your changes to take effect, you must reboot (restart) your PC.

■ Troubleshooting

Problems typically arise from using inappropriate syntax, using an invalid escape code, not using either the left bracket or the \$E metastring, or not using a proper ENTER command. If you decide to use Ansi.sys, you'll probably uncover some others of your own, too.

In addition to those errors, some utilities turn off the key definition capabilities of Ansi.sys so the command will never be executed even though you typed in the proper syntax and command. For example, PKSFANSI, mentioned earlier, does this. If you have it, or other utilities with that feature, check your documentation to

see how to disable it if you want to try key remapping using Ansi.sys.

If you've entered several commands and find that something is causing problems, but you aren't sure what, reboot your computer. While the "Starting MS-DOS" message is on-screen, press and release F8. This causes each command in Config.sys to be carried out separately. The PC will mark problem lines and give you the option of executing each command with a "Yes/No" question to help you locate and correct any problems.

If changes you made to Config.sys were incorrect, your system may start incorrectly. If it hangs up or shuts down, insert your startup diskette in drive A:, and press the CTRL-ALT-DEL keys simultaneously. Those keys, when pressed together, reboot your system in a gentler way than simply hitting the "off" switch.

Ansi.sys offers some interesting options and timesavers for DOS users who want a little extra from their systems. But be careful. Back up your system, and be certain you have made boot diskettes from your Config.sys and Autoexec.bat files before beginning. Choosing the appropriate commands and entering them correctly takes a bit of patience and some knowledge of computers, and even experts sometimes make mistakes. ●

by Gail Dutton

Beyond Ansi.sys

If you find Ansi.sys intriguing but are concerned about performance with a slower PC, or want some extra flexibility, consider Ansi.com. This utility program resides in the system's memory, like other terminate-and-stay-resident (TSR) programs. It performs all of the Ansi.sys functions but works at higher screen speeds, can be activated or deactivated at will, uses a larger buffer that allows the removal of old key assignments, and works with video modes of any width or length.

Ansi.com can be downloaded from PCMagNet, which is available on CompuServe. Once downloaded, Ansi.com installs itself like other TSR programs, but only if Ansi.sys is *not* installed. It views Ansi.sys and Ansi.com as redundant, so if you want Ansi.com, first uninstall Ansi.sys from the Config.sys file by removing the statement Device= Ansi.sys. Then add Ansi.com

to your Autoexec.bat file and reboot your system.

When you install Ansi.com, you have a choice of FAST! SLOW, and ON/OFF. The default parameters are FAST and ON. FAST routes ANSI's output directly to the screen buffer, rather than through the BIOS first, and is the method of choice, except for machines using CGA video adapters, the predecessors to VGA. If used with that adapter, "snow" will appear on-screen. The SLOW mode solves that problem by using BIOS calls, which is the method Ansi.sys uses. The ON/OFF option activates or deactivates the ANSI filter. If you choose the OFF mode, your machine will act as if Ansi.com is not loaded. These FAST! SLOW, ON/OFF options can be altered during installation or anytime afterwards.

Unlike Ansi.sys, Ansi.com has a 60KB maximum buffer size for key remapping.

However—and this is important—the default setting is only 200 bytes, the same amount reserved by Ansi.sys. This buffer can be set only at installation by using the /B parameter and setting the "nnn" parameter to the buffer size you want.

Also unlike Ansi.sys, Ansi.com lets you remove old key reassignments from the buffer, so if you make a mistake or change your mind, you can delete the reassignment and save the buffer space. With Ansi.sys, all of the commands were stored, even though the device driver used only the most recent reassignment.

The entire set of reassignments stored in the buffer can be cleared by using the /C (clear) parameter, as in ANSI /C. Using /U uninstalls Ansi.com. Beyond this, Ansi.com uses the same set of ANSI commands and the same command syntax used by Ansi.sys. ●

Notebook Computers:

Data On The Go

Advertising campaigns are waging a war of words over whether you should own a notebook computer (sometimes called a laptop computer) or a desktop computer. The portability of the notebook computer is undeniable compared to its desktop counterpart. Notebook computers' new features almost can match what desktop computers loaded with features can put together. With plenty of portability and features, a notebook computer might seem to be the logical choice.

But here's the catch: You shouldn't look just at features and portability but your needs and the cost of notebook computers.

■ Assessing The Need

Your reasons for purchasing a computer might range from using it to track your household expenses to owning a "rad" game machine. It might be for both. If you are buying a computer with a student in mind, it makes a difference if the student is in first grade or is getting ready for college. Each student will have different needs requiring different computing answers. With children from preschool age to eighth grade, their needs and school policy might not allow personally owned computers in the classroom. High school and college students, however, might want to use a notebook for research in the library or classroom.

Your budget always plays an important role in any major buying decision, and purchasing a computer shouldn't be viewed differently than buying any other utilitarian tool. If you bought a washing machine, your selection wouldn't be based on how it looked, but how well it washed clothes.



Keeping in mind that a computer is merely a high-technology tool will help you keep your priorities in perspective.

■ The Case For Notebooks

The notebook computer is king of the portability hill. If you need to communicate with others or write memos while traveling, the notebook is your best choice. The portability of notebook computers also makes them attractive for college students, especially for students who live on campus.

You can load about every feature imaginable on the latest crop of Pentium notebooks. Soundboards with built-in speakers and CD-ROM drives (some even removable) give you full multimedia capabilities. Other familiar devices that can be used with a notebook computer are modems for communication and touchpads that replace mice and built-in trackballs. The memory and storage capacities of notebook computers now can compete with heavy-duty desktop computers with random-access memory (RAM) expansion available at 32 megabytes (MB) or more and hard drive capacities of nearly 1 gigabyte (GB). Brilliant active-matrix screens boasting 800 x 600 resolution makes screens easier to view and

add pizzazz to the display. This new generation of notebooks will run any software available and with new batteries lasting five to six hours between charges, your work day is covered. (Resolution is the clarity of detail attained by a monitor in producing an image and is measured horizontally and vertically by a unit of measurement called pixels.)

■ Quasi-Desktops

To bridge the gap between notebook and desktop computers, notebook manufacturers offer docking stations.

A notebook computer is inserted into the docking station, which sits on a desk like a desktop computer. This lets you use a notebook computer with a larger monitor and full-size keyboard like a desktop computer. Docking stations offer expansion slots for adding interface cards and drives, and some even include high-end speakers for stereo sound. Add a keyboard and full-size monitor, and you have something similar to a complete desktop system that can hold its own against the best of them.

These gadgets come with a price. A fully loaded notebook easily can exceed \$7,000, which is probably a bit more than the average person is willing to spend. Working with a 10-inch screen for extended periods of time is definitely not as comfortable as working with a full-size monitor. And although notebook computers have full-size keyboards, you may find an add-on keyboard easier to work with. You don't have to have a docking station to use either of these devices, but it adds to the overall cost. Docking stations let you install add-on applications such as a CD-ROM drive, sound, and SCSI interface that might not be included in your notebook. Naturally, each of these add-ons comes at a price. (SCSI, or Small Computer System

Interface, ports are used to connect computers to peripheral devices.)

■ Notebook Screens

Notebook computer screens are available in three configurations: **monochrome**, **dual-scan color**, and **active-matrix color**. The monochrome display is rapidly being replaced by dual-scan color. Dual-scan color has a limited viewing area, and if you aren't looking at the screen straight on, the entire screen may not be totally visible. This screen isn't the one to buy if more than one person needs to view the screen. The alternative to dual-scan color is an active-matrix screen, which offers excellent display characteristics but with a substantial increase in cost, ranging from \$700 to \$1,000 more than its dual-scan counterpart. Even though monochrome screens are falling into disfavor, they are still a viable choice if your work is limited to word processing and some spreadsheet applications. The typical monochrome screen is \$200 to \$400 less than a dual-scan screen. And if you plan on using an external monitor, this savings can pay for it.

Another issue with notebook displays is screen resolution. Since a notebook computer's graphics adapter is integral to the system, you're limited to its built-in resolution. If a notebook supports a 640 x 480, 16-color adapter, that's the

maximum resolution it will display. You can't change to a higher resolution display or number of colors. You can buy a notebook with a high-resolution adapter with **super video graphics array (SVGA)** (800 x 600 pixels) and 256-color capability. But again, this upgrade adds to the cost.

Buying a notebook with few features and then planning to upgrade or add a docking station later might reduce your costs but isn't necessarily a good solution to the problem. Unlike a desktop computer, upgrading a notebook computer's memory or disk capacity isn't always easy. Depending on the manufacturer and the notebook computer's configuration, users may have to have their PC's vendor perform the upgrade. When users aren't able to upgrade their own computers, a higher cost is the result.

The same holds true for other components of the computer. If a desktop computer keyboard is damaged, it is simple to unplug the damaged component and plug in its replacement. This isn't true with a notebook. If the keyboard gets damaged, you are out of business unless you are carrying an external keyboard. This is an excellent reason why you shouldn't have young children at the helm of a notebook computer. Spilling a drink on an external keyboard is far less devastating than one dumped on a notebook.

■ Adding Up Costs

As mentioned, a fully equipped Pentium, multimedia notebook can easily cost more than \$7,000. Add to

that a docking station costing \$500 to \$800, a no-frills 15-inch monitor at about \$350, and a keyboard at an average of \$50, and you end up with a computer that easily tops \$8,000. The cost of a lower-end notebook starts at about \$2,000. This will buy you a 75MHz 486DX4 dual-scan computer with little memory and hard drive capacity and no multimedia capabilities. This saves you a big chunk from the overall cost, but by the time you add the extras, you still are paying more than \$3,000 for a 486DX machine. At one time, that was a good price, but with today's volatile market, that's no longer true.

Starting with a fully equipped, name-brand 90MHz Pentium desktop computer that includes full multimedia capabilities, a 28.8Kbps internal modem, a 15-inch SVGA monitor, and a graphics adapter should cost about \$3,000. Change the 90MHz Pentium to a 100MHz 486DX (if you can find one), and the price drops by about \$1,500. In either case, you have a full-size monitor and keyboard and a computer that is easier to work with when it's time to upgrade or repair. For example, if your sound card dies, it doesn't have to shut you down. If you're handy with computers, it's simple to remove and replace interface cards. With a notebook computer, it will have to be fixed by the manufacturer. That same situation is true for almost all notebook components.

■ Adding It Up

We aren't bashing notebook computers, which are a vital computing tool in many situations. But you must decide how you plan to use the computer before you buy it. If you plan to use it outside your home or office, a notebook computer might be the right computing tool for you. If all of your work is confined to your home or office, a desktop is the better choice.

(NOTE: Notebook computer prices mentioned in this article are for name-brand computers such as NEC, Toshiba, and Compaq. Other systems are available that might cost less, but the ratio of notebook computer cost to desktop computer cost is comparable.)

Whichever computer you buy, a notebook or a desktop, a computer is only worthwhile if you use it. As a first-time buyer, make sure you are not caught up in the hype. With a clearly defined reason for buying a computer, you are ahead of the game and can make a wise choice. ●

by Richard F. Huber

Is It The Right Time To Buy A Portable?

It used to be standard procedure for computer companies to introduce new technologies in their desktop systems that eventually (a year or so later) would migrate to their portables. About a year after that, the price for the new features would finally drop out of the stratosphere. This "portable premium" meant that users who wanted to buy portables with the latest technology were always slightly behind (and significantly poorer than) their desktop-purchasing counterparts.

Now the technology curve is shrinking.

True, you still pay a premium for buying a notebook PC over a similarly decked-out desktop. But the amount you'll have to pay for portability has dropped, and the length of time you'll have to wait for new features

to appear in portables has almost disappeared. In some cases, portables are leading desktops with new technologies.

When it comes to RAM, hard drive space, and raw CPU power, affordable portables now abound. The big jump in price comes with multimedia options and color capabilities. CD-ROM drives and active-matrix screens can easily double the price of a decent notebook. If you can do without these options, there's never been a better time than the present to buy. Even if you must have a top-of-the-line, fully equipped model, the premium you'll pay has never been smaller.



Managing Your Money With A Modem

The home PC may be banking's biggest innovation since drive-through lanes.

Popular personal finance programs, such as *Microsoft Money* or *Intuit's Quicken*, can be used as electronic links to banks, allowing bill payment, statement retrieval, and fund transfer all from the home. Instead of stuffing transactions in those plastic tubes from their cars, customers now can send transactions over any phone line.

Twenty U.S. banks and organizations such as American Express, and Smith Barney began offering the service nationwide last October. Many more financial institutions are likely to get onboard the online banking wagon in the coming months, bringing increased competition that is driving down prices. For the first time, electronic banking is cheap enough to be an attractive option for home users.

Carol Corcoran, an Intuit public relations assistant, says some banks are even advertising electronic banking at no charge. Paying a bill electronically usually costs about as much as a postage stamp.

"It's a lot cheaper than it used to be," she says. "The price had really been a barrier."

The Bank of Boston was among the first group of major banks to begin offering the new services last October. Karen Schwartzman,

bank spokesperson, says online banking makes sense for both consumers and financial institutions. Not only are electronic transactions less expensive than paper transactions for banks to process, they make life easier for Joe

flows. More than just a way to look over last month's statement, banking online lets customers quickly reconcile and categorize all of their transactions nearly automatically. Budget-making help and various financial

analysis tools are a mouse-click away.

The Bank of Boston's online menu is typical of most banks offering electronic services. Schwartzman says customers can order checks, communicate with bank representatives via E-mail, transfer funds between accounts, stop payment of a check, download balances, and automatically pay bills electronically. Electronic bill payment has been available through a number of companies for some time, but the other features are new to most areas.



Checkbook.

"It is a very convenient delivery channel for the customer," Schwartzman says. "It's making us a more attractive bank for avid computer users."

Online service is a concept bankers expect eventually will prove popular with a much larger audience than the "computers equal life" crowd. Connecting with banks through increasingly powerful personal finance programs gives average customers an easy method for sorting through tangled cash

Bank On It

For consumers who might have a little bit of trouble getting geared up to balance the old checkbook, online banking can bring an end to accounting chaos. Frequent downloading of statement information from the bank can practically end data entry. Once checks and electronic transactions are processed at the bank, the information can be piped into Quicken or MS Money. Users then help the program categorize new payees not recognized from previous downloads. The data is combined with



previous statements to create up-to-date balance information.

Of course, the online statement won't take into account checks that haven't yet been cashed or electronic withdrawals that haven't made their way to the bank. Customers whose accounts dip toward the minimum from time to time, or those who simply want the most accurate information, will want to record transactions on their own computers on a regular basis. In this case, downloading statements can still be an easy way to make sure everything is entered correctly and to avoid costly mistakes. The same process can be used for credit card accounts held through the same bank.

Banking online also lets you use your computer like an ATM to transfer money between accounts. For instance, a Bank of Boston customer might have a savings account and checking account. These two accounts are set up in a Microsoft Money file. To move \$500 from savings into checking, customers would enter the transaction into the program as always. In a special drop-box, they then would choose Electronic Transfer for that transaction. The information is saved by MS Money into a list of actions to perform next time the computer is connected to the bank.

When all transactions have been entered into Microsoft Money, the customer hits a button to dial a special toll-free number. All of the pending actions can be reviewed one last time before approval. If everything is correct, the home computer communicates with the banking computers for a few seconds, and the transactions are completed.

Assuming your balance is still in the black after receiving an online update, you also can take advantage of electronic bill payment. Rather than writing out checks once a month to cover various utilities, charge accounts, mortgage payments, and the like, a financial program can take care of these transactions online. Payments entered into Quicken or

Money and then transmitted to the online banking service will be withdrawn from the correct account and automatically sent to the payee. The computer can remember regular bills to repeat each month.

Checks can be written to nearly anyone this

an ATM. The problem with ATMs is that most banks charge extra fees for using foreign machines, or those not owned by the bank.

Corcoran says some banks are beginning to offer free use of most any ATM as a way to get around this obstacle. At least one of the banks hooked up to Quicken and Microsoft Money was making this service available to customers as this article was written. The combination of long-distance electronic banking and free local ATM use benefit those not in an area directly served by one of the online banks.

"It's an advantage for people who don't care if there is a branch nearby," Corcoran says.

Of course, machines also don't give out loans, money orders, cashier's checks, and other services generally obtained at bank branches. It also is impossible, at least at this point, to transfer funds

between accounts at different banks. A person could use an electronic payment to send money from one bank to another, but it wouldn't happen automatically as it would in Quicken or Microsoft Money. The electronic realm, while convenient for many, still has room for improvement.

One potential drawback that both Corcoran and Schwartzman say shouldn't concern customers is security. Corcoran says many users seem to be worried that hackers or other miscreants could somehow gain access to their bank accounts. Such fears are unfounded, she says, and Schwartzman agrees.

"It's no different than a private phone conversation," Schwartzman says. "This is not banking on the Internet. It's not something someone could penetrate."

Connections to Intuit's online banking hub, a computer near Chicago where customers and banks meet to exchange information, are made over phone lines rather than computer networks. All information sent over the phone is encoded with a sophisticated encryption technique. It would be difficult at best for anyone to tap into these communications and even



It's easy to get started in electronic banking when you use software such as Microsoft Money (above) or Quicken.

way. Once a request for online bill payment is received by the banking service, it's either made electronically or through the mail. Many companies will accept electronic payments, which are faster and cheaper for everyone. If the payment is to go to an entity not set up for electronic payments—perhaps a daughter at college or a local business—a check is cut for the proper amount and sent through U.S. mail to the address specified.

Most banks charge a small fee for this service, often \$5 a month for 20 transactions. That works out to 25 cents for each transaction, which is cheaper than a stamp. A few companies can't be paid this way because they must receive certain pieces of paper, such as bill stubs, along with checks. However, such requirements are fast disappearing.

■ Not Quite Perfect

Online banking can be a great way to keep track of cash, but it isn't a full-fledged replacement for cheery tellers just yet. Schwartzman says online banking has at least one major limitation: PCs can't spit out cash. For that, bank users must drive to their local branch or find



harder to decode them.

Electronic banking should not be confused with the Internet's DigiCash, a proposed system of payment on the World Wide Web. Internet content providers are testing various schemes that would let Web users automatically pay small amounts of money out of a debit account for pages of information. For now, such accounts have nothing to do with online banking. It's conceivable that future Web browsing might feature seamless integration with traditional checking accounts, allowing immediate payment for downloadable goods such as software.

Today's electronic banking isn't found on the Internet, but it can be spotted on America Online (AOL). AOL announced last November that they would begin to offer certain online banking features to AOL users starting this year. AOL members who sign up for the service will be able to check account balances, transfer funds, and pay bills right from the AOL interface. Pricing for this service will be determined individually by participating banks.

■ Signing Up

It isn't hard to set up electronic banking on your own with Quicken or Microsoft Money, provided you have the necessary information from your bank. In Quicken 5, just click the Online Banking graphic of the HomeBase window. A help box appears with instructions on how to enroll, along with bank phone numbers. In the latest version of Microsoft Money, click the Online Services button in the Contents page. An online setup Wizard guides you through the process.

Both programs require special routing codes obtained from the financial institution. To find out if your bank offers online banking, call them directly. Or, see if there is a bank in your area by calling one of the online banking hotlines listed in either Quicken or Microsoft Money help files. Many banks are running special offers to attract online customers. Rather than the traditional toaster, these enticements can range from free software to free electronic bill payment for limited amounts of time. Unless you are already with a bank, it might pay to shop around a bit.

Upon signing up with a bank, you will be sent the information necessary to complete the online setup on your home computer. If none

of the banks you find will work in your situation, you can still get electronic bill payment through a national company such as Intuit or CheckFree. Neither of these companies offers online banking, but you would still be able to use your computer to automatically pay bills to virtually anyone.

Corcoran says if your bank doesn't offer electronic services now, it probably will in the not-too-distant future. Intuit expects a majority of banks will be online someday. A lot of interested banks have been calling in the last few months, Corcoran says, and any bank is eligible, regardless of size.

"Banks are realizing this is a convenience to their customers," she says.

Schwartzman says her bank received more than 1,000 applications from customers who wanted to use the service within its first month last year. She says the reaction was considered to be a good indication that customers wanted the new service. With 280,000 registered users of MS Money and Quicken in New England, Schwartzman says, the potential is there for the bank to pick up some new business.

As the younger generation comes of check-writing age, Schwartzman expects to see a big upswing in the number of electronic customers. People who have known computers throughout their lives probably will be more comfortable with them, she says.

By the time today's teens and toddlers open their first account, the bank landscape may be substantially different from what we know today. Online banking, combined with free use of ATMs, potentially could gather a regional or national customer base for any bank physically located anywhere. As more transactions are handled electronically, the numerous branches scattered about cities and suburbs might not be so necessary.

This slow shift in the way banks do business is another step in the evolution of a more cashless society. As debit cards, credit cards, home banking, and other electronic transfers take hold, the need to carry actual money or write out paper checks will diminish. For a look at the future, step into an electronic bank near you. ●

by Alan Phelps

Bills Without Paper

While online banking allows the electronic payment of bills, the delivery of bills still must be accomplished using traditional means. Some companies, such as CheckFree of Columbus, Ohio, would like to bring this step up-to-date as well.

CheckFree is pilot testing a service in parts of Texas, New Jersey, and Pennsylvania that delivers monthly electric utility bills to 2,000 homes via E-mail. The company, already involved in electronic bill payment, believes computer users would be just as interested in automating the other end of the process.

The electronic bills look much like their paper counterparts, except there isn't anything to throw away or send off in an envelope. Instead, customers use electronic bill payment through CheckFree to settle the account. CheckFree says an improved version of the service is on the

way that will allow payment with the touch of one button and show a history of billing for each company.

Many companies today accept automatic payments straight from customer bank accounts. Periodically, the necessary amount of money is electronically transferred from the customer's account to the company's account. Sometimes a paper statement arrives in the mail detailing what was done. Electronic bill delivery works in much the same way, except that the customer can decide exactly when a bill is paid from month to month. This lets people keep their money for longer amounts of time and earn as much interest as possible.

Sending billing information through the mail represents a major expense for many companies, and sending them back costs consumers postage stamps. Online bill delivery and payment is one system that can help save money on all sides. ○



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Track Your Investments With A PC

A computer is one of the largest investments a family will make. In addition to the initial expense of the \$2,000 to \$4,000 computer, there are software applications, hardware components, and online connection expenses that may cost a family hundreds of dollars every month. And when it's time to upgrade, the costly cycle starts all over again.

Fortunately, there are some indirect methods of employing the computer to recover some of that burden, not the least of which is using your computer to manage your financial investments. Coupling an investment management program with an online investment tracking site lets you monitor the growth of your investments. Or, if you're a little more confident in your brokering abilities, you can actually buy, sell, and trade stocks, bonds, and mutual funds through your own computer. Regardless of your business acumen, we'll show you how a computer and modem can help you in all stages of your investment dealings, from selecting the right investment to achieving maximum returns.

■ Choose Your Poison

Although some diehards prefer to buy and sell as often as possible in the hopes of getting the largest profits in the shortest amount of time, investing for many people is a passive activity. Investors of the latter persuasion simply deposit an amount of money into a certain fund—the selection of which is often based on the advice of a friend—and there it remains untouched and out of mind until the time comes for it to be retrieved.

The most important decision for this type of investor is not when to buy and how long to wait before selling but which investment option best suits the individual's investment needs and will offer the most secure and profitable returns in the future. Therefore, learning about the various options available and weighing the risks of each are vital to the success of

the investment. Making an informed and confident investment decision will provide peace of mind and lead to better chances of larger returns in the long run.

A good place for the novice investor to start the investment process is in an online service's financial center. These financial centers, which can be accessed free of charge (except for the online service's standard, per-hour fee) by online service subscribers, offer financial and investment information, such as answers to frequently asked questions, company profiles, the names of reputable brokerage firms and financial institutions, definitions of investment terms, and explanations of investment concepts. Most also contain chat rooms, forums, and message boards where you can post specific questions you have about investment possibilities, and other users or professional financial analysts will answer them.

After you feel comfortable with the basic financial concepts, it's time to start comparing specific investment options. Generally, the average investor is interested in three investment options—stocks, bonds, and mutual funds. All three offer relatively low initial investments, the concept behind each is easy to

understand, and their profitability has proven to be steady and progressive over time.

(As a short summary, stocks are shares in the ownership of a corporation, bonds are certificates of indebtedness in which the holder of the bond is owed the amount of the "loan" plus interest, and mutual funds are collections of pooled assets, which are gathered from a number of different sources and then infused in various investment vehicles, including stocks, bonds, options, commodities, and money market securities.)

Selecting an investment option on your computer usually can be done in one of two ways. The first method involves using a selection application, such as Intuit's *Your Mutual Fund Selector*, to guide you through the process of selecting an investment. These programs let you enter personal information into a database, then the program suggests an appropriate fund in which to invest. They also provide general investing information so you'll feel comfortable with your investment decisions.

The second method lets you take a more involved role in choosing your investment. A number of investment planning programs let you compare investment options using a variety





of indicators, such as total return, momentum, asset allocation, and price history. Past performance indices, future earnings estimates, articles from business magazines and newsletters, and informative tutorials also are included in many of these programs to help you make an educated investment decision. Some of this information also may be obtained from finance-oriented online sites.

■ Buying . . . Selling . . .

After you've made your decision, you're ready to call your broker to make the investment for you, or you can use your modem to make the investment yourself. You may prefer to let a broker make your investments if you've developed a trusting relationship with a certain one or if you don't have the confidence to trade on your own yet. Or, you can take on the investing responsibility yourself, however, in which case your computer will become your most valuable investment tool.

For elementary investment trading purposes, you can use the online trading service of the PC Financial Network (PCFN). PCFN, which is fully accredited by the Securities and Exchange Commission and is the largest online discount brokerage, lets you buy and sell stocks and mutual funds online at a reduced commission rate and charges no opening or monthly fees. Although you can use your modem to request an application to purchase bonds or options, all of PCFN's other services must be conducted using regular mail or telephone. PCFN works as an adequate, albeit simple, investment tool when used in conjunction with other online sites, but it will fall exceedingly short of meeting the demands of the serious investor.

PCFN is available only through America Online, Prodigy, and the Reuters Money Network, but the company is currently working on a direct Internet connection.

The serious investor—the one who buys and sells on a regular basis—will require a serious investment tool in order to accomplish investment goals, and only an investment application can fulfill those requirements. Investment applications synthesize the financial capabilities of the brokerage office with the communicative capabilities of the personal computer. In addition to the buying and selling capabilities of these programs, you can follow the

movement of your investments, research corporations that offer shares of stock on the exchange, maintain a detailed record of the daily growth of each investment, organize your portfolio, analyze market trends that affect your investment, chart growth patterns, and project future returns.

Doing your own investment trading gives you the freedom to customize your portfolio, and it may save you money on reduced commission charges. These applications also may increase your profits, according to Joanne Reed, director of electronic products for Charles Schwab and Co.

"The information an investment application provides is real-time, so you can act extremely quickly," she says. "If you meet with a financial advisor, on the other hand, they're going

information about most investments. Although they don't offer a comprehensive evaluation of investments, they do keep you aware of your investment's progress. In addition, many of these online sites can be accessed free of charge.

But for those who prefer to take an active role in the growth of their investment, financial management and investment programs are the only comprehensive sources of investment information. "The investment program sets forth all the information you need in order to make your decision about how to invest," Reed says. "When you meet with a financial analyst, they're going to give you an opinion, but an investment program provides you with the tools so you can create your own opinions."

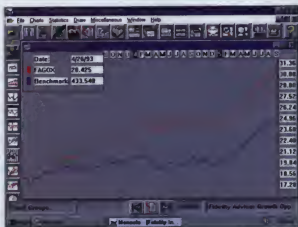
Not everybody is prepared to use those tools, however. Although most investment applications

were designed with both the MBA and the beginning investor in mind, these programs may seem bewildering to the fiscally fainthearted as complicated graphs and strange terms abound. While comprehensive manuals and online tutorials can lead anyone through the complexities of investment management, the key to using investment applications most effectively for investment management is to know how you plan to interact with your investments.

To stay a little more up-to-date on your investment portfolio and all your financial dealings, an investment planning program lets you organize all of your financial affairs into one database. You can update the progress of your investments either by entering information from offline sources, such as the newspaper, financial magazines, or business reports, or by connecting to an online site that will automatically post updates to your database. These programs are usually less complex, easier to understand, and less expensive than investment applications, but they don't let you actively buy and sell from your home PC, and you still must rely on a financial analyst or broker.

For the serious investor who needs to be involved with the investment's quotidian intricacies, a program such as Charles Schwab's *StreetSmart* will keep sharp tabs on every possible financial factor in case the investor suddenly decides to sell or buy again.

"For the investor who has a pretty good idea of where he's trying to get and how he wants to get there, I think that the information



Investment applications, such as Manhattan Analytics Inc.'s *Monocle*, let you keep a close eye on the growth of your investments.

to read (the investment information), think it through, and then meet with you."

■ Waiting For Cash To Pour In

Once you've made your investment, you can continue to use your computer to monitor the growth of your mutual funds, stocks, and bonds. Many online sites provide articles, message boards, chat rooms, and stock quote updates to keep you aware of market trends, give you constant knowledge of your investment's worth, and help explain why your investment is performing a certain way.

For the long-term investors—those who are saving for retirement or some other long-term plan and who are not concerned with the daily movement of their investment—these online financial sites provide adequate coverage of and



(obtained from an investment application) is at least as good as a retail broker would be," says Susan Futterman, co-author of the book "Using CompuServe To Make You Rich."

Still, the fact remains that while such an unbridled opportunity to buy and sell investments can prove beneficial to the educated investor, it could prove devastating to the amateur. Even with numerous protection

devices installed in each investment application, a misplaced zero or an incorrect calculation could unwittingly slip by and possibly lead to bankruptcy or financial ruin. It's important for investors who choose to use a program like this to understand the complexities and implications of investment dealings.

Ultimately, however, it doesn't matter

whether you choose to go it alone or hire a broker to trade for you. The knowledge you gain from using an online financial site or a financial planning application to keep track of your investments will give you the confidence of knowing where your money is heading and what to expect when it gets there. ●

by Jeff Dodd

Financial Advice At Your Fingertips

Traditionally, investment management has been left to employers and the "professionals"—stock brokers, bankers, and financial analysts—because it involves large, and largely indispensable, sums of money reserved for important purposes such as retirement and education. The burden of responsibility is shifting, however, and individuals now must become more involved in their investment decisions.

Thanks to technology, particularly the computer and the Internet, it's easier than ever for individuals to take charge of their money and prepare for the future. To help you get started, we've outlined a few of the better sources for investment management information and assistance.

(NOTE: None of the listed prices includes online connection fees, which range from the standard per-hour rate charged by online services to \$75 per quarter charged by Manhattan Analytics Inc.)

Prodigy's Business & Finance

Jump: **business**

America Online's Business and Finance

Keyword: **finance**

CompuServe's Finance

Go: **finance**

Microsoft Network Finance

Go: **business**

PCFN

AOL Keyword: **pcfn**

Prodigy Jump word: **pcfn**

General Information:

(800) TALK-PCF (825-5723)

Exceptional investment information—from the Fidelity Online Investor Center to articles from the latest business magazines—can be acquired from the following Web sites. While each site provides some distinguishing

advantages, they all basically contain similar services, including message boards, answers to frequently asked questions (FAQs), stock quotes, company profiles, and market updates. Prodigy and America Online also offer links to the PC Financial Network, where you can buy and sell stocks and mutual funds online.

Intuit's *Your Mutual Fund Selector*

\$28.48 at Egghead

(800) 964-1040

(520) 295-3110

<http://www.intuit.com>

This program leads you through the process of selecting a mutual fund. Informative video clips help you answer each section of the program. After you have narrowed down your investment possibilities to a handful of mutual funds, you can perform your own research of each fund to determine which one you prefer.

Manhattan Analytics Inc.'s *Monocle*

\$149 available by direct order only

(800) 251-3863

(310) 374-2142

<http://www.ManhattanLINK.com>

Detailed charts and graphs let you study the performance of more than 1,000 mutual funds for quantitative and technical analysis. You also can download pricing updates, rank funds according to as many as 40 criteria, and generate objective investing advice. Because of the complexity of information contained in Monocle, this program is aimed at the serious mutual fund trader seeking every opportunity to maximize profits.

MarketArts Inc.'s *WallStreet Money Deluxe*

\$36.08 at Egghead

(800) 998-VIEW (998-8439)

(214) 783-6792

<http://www.gumdev.com/marketarts>

WallStreet Money Deluxe gives you a push in the right direction as you begin the investment process. Not only does it guide you through the selection process, teaching you about the investment basics and advising you of some sound investment options, but it also lets you track stock and mutual funds to determine which ones will prove most beneficial to you.

Charles Schwab's *StreetSmart*

\$39 available by direct order only

(800) 334-4455

(415) 627-7000

<http://www.schwab.com>

Whether you want to do online trading, manage your portfolio, or research prospective investments, you can do it all with StreetSmart. Although anyone can purchase and use this program, it's designed primarily for the Schwab account holder. The best aspect of this program is that serious part-time investors can perform their own investment management, but they still can rely on Schwab for advice and assistance.

MarketArts Inc.'s *Windows On Wall Street*

\$39.89 at Egghead

(800) 998-VIEW (998-8439)

(214) 783-6792

<http://www.gumdev.com/marketarts>

Convert your home office into a brokerage firm with Windows on Wall Street. This total investment package gives you the opportunity to analyze the markets and then invest accordingly. It doesn't offer portfolio management capabilities so you can't monitor your complete portfolio, but for strictly analytical purposes, Windows on Wall Street is a powerhouse. ●



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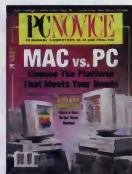
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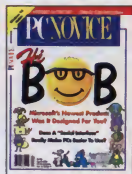
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Find It ONLINE

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<http://www.bankamerica.com>

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<http://www.bbb.org/bbb>

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Dilbert:

<http://www.unitedmedia.com/comics/dilbert>

No business day is complete without a dose of the sardonic humor of Dilbert. In addition to catching the latest "Dilbert" comic strips, you'll be enlightened by Dilbertian news and views. You even can purchase all sorts of Dilbert and Dogbert

merchandise. Well, with one exception—Dilbert's tie is one-of-a-kind.

The Integrity Center Inc.:

<http://www.integctr.com>

Obtain a background check on any prospective baby sitter, health-care giver, or employee by dialing up The Integrity Center online. Costs range from \$9.75 for a social security check (which is also useful if you think someone else may be using your number) to \$83.25 for a civil litigation history. You also can receive general security information, hiring advice, and links to related sites for free while you're here. This might prove to be an especially valuable site when you're researching candidates this election year.

Intellimatch

Online Résumés:

<http://www.intellimatch.com>

Use technology to acquire a better job by placing your résumé online, where it can be easily accessed by dozens of employers nationwide. After completing the standardized résumé format, your résumé is posted to the Intellimatch database. This site also provides information about hundreds of available jobs, employers who use Intellimatch, and career advice so you can stay on top of possible employment opportunities.

PAWWS Financial Network:

<http://www.pawws.com>

Keep an eye on your financial investments around the clock with this Internet investment resource. For \$8.95 per month, \$25 per quarter, or \$95 per year, you can track the worth of your financial portfolio, make online transactions through PAWWS brokers, receive general financial advice, and read daily business news updates. If you'd prefer to obtain your financial information from a more



familiar source, check with your own investment firm to see if it offers a similar service on the Web.

World Yellow Pages:

<http://wyp.net>

The World Yellow Pages (WYP) gives customers and businesses the opportunity to expand their markets. Business owners can take advantage of the World Yellow Pages' ability to reach every corner of the Earth as well as WYP's generosity to provide a free home page for any functioning business. Customers, on the other hand, especially those who are in the process of moving, can use the information to locate businesses in any community across the United States. It's just another example that it's really a small world after all.

Finally, during this month renowned for love and the presidents, we offer a duo of relevant sites.

World Wide Valentines:

<http://www.netview.com/valentin>

Add a high-tech twist to your love life—use the modem to send your sweetie a Valentine's

Day message on the Internet. Adding a message to the World Wide Valentine will broadcast your feelings across the universe and let everyone know of your professed love for that special someone. (While this may be a novel idea, you'd still better send something tangible—i.e. candy, flowers—or you might not have a valentine very long.)

The White House:

<http://www.whitehouse.gov>

Celebrate President's Day by learning about the Executive Branch of our country's government. This classy Web page lets you hear or view the President's welcome message. You can tour the White House estate, sign the guest book, and send E-mail to various government officials, including Mrs. Clinton. Links to other Web pages let you learn about the many other government institutions, too. This site is free, so it's nice to know you're getting a little Internet bang for your tax buck.

Compiled by Jeff Dodd

Deciphering Hard Drive Jargon

Remember the first time you learned about Morse code? With your Morse alphabet in hand, you exchanged messages with a friend, either with flashlights in the dark or with a special, Morse code walkie-talkie. Before long, though, you realized using the series of dots and dashes to spell out even the simplest message took forever. You eventually modified your messages, using abbreviations and acronyms to shorten the number of letters required.

Computer programming professionals followed the same principle when developing "computer speak." They quickly became tired of spelling out terms such as random-access memory and super video graphics array, opting instead for acronyms. For those of us who aren't computer pros, however, the large number of acronyms serves more as a source of confusion than enlightenment.

Such confusion can be costly, especially if you encounter the acronyms while shopping for computer products. We'll help you decipher three acronyms: IDE, EIDE, and SCSI. If you've looked at any type of add-on hardware device, especially a hard drive, you've encountered these computing standards. You've probably noticed a price difference among SCSI, IDE, and EIDE hard drives, but there's much more to deciphering these acronyms than price. IDE, EIDE, and SCSI refer to the type of **interface**, or connection, used when your computer and hardware devices communicate. We'll give you the

important facts concerning IDE, EIDE, and SCSI.

IDE

Integrated Drive Electronics (IDE) standard hard drives are most often sold in today's IBM-compatible PCs, easily surpassing hard drives with the SCSI standard. With an IDE-standard hard drive, the controller

numerous types of hardware devices, IDE is usually considered a standard for hard drives alone, although IDE is found with some internal CD-ROM drives as well. For each hardware device you want to add under the IDE standard, you'll have to install an expansion card, which might be tough in a computer with a limited number of expansion slots.

50 wires and usually connect to an expansion card. (A motherboard is the main circuit board containing the primary elements of a computer system).

(NOTE: You can install some IDE and SCSI hard drives in the same computer, but it's usually more hassle than it's worth because of numerous hardware conflicts. You'll need to install a hard drive interface card to help your computer distinguish the two. Even with the interface card, some IDE and SCSI hard drives cannot coexist; check for this possibility in your computer before purchasing the second hard drive.)

The IDE standard is slower than SCSI, meaning your hard drive access time is slower, but the difference isn't noticeable in most applications, with the exception of multimedia applications. Of course, the newer EIDE standard takes care of the speed problem.

You've probably heard the terms **master drive** and **slave drive**; they refer to IDE interface hard drives. The master drive is the hard drive from which your computer boots, and a slave drive is the secondary hard drive. If you install a second IDE hard drive, you'll need to configure jumper switches to designate the master and slave drives.

EIDE

Enhanced Integrated Drive Electronics (EIDE) hard drives are becoming more prevalent. The EIDE standard, which was first seen in hard drives on store shelves in mid-1994, should be included on most new PCs by the middle of this year.



electronics are included inside the device, meaning a separate adapter card isn't needed as it is with SCSI. IDE hard drives are less expensive than SCSI drives, and they are easier to install as well.

With the IDE standard, an adapter can handle a maximum of only two hard drives, though, which may not be enough to meet everyone's needs. EIDE and SCSI allow more connections per adapter. And while the SCSI and EIDE interfaces work with

If you have an IDE interface and you decide to add a second hard drive or replace your existing hard drive, you'll need to use another IDE drive rather than a SCSI drive. How can you tell what type of adapter you have? Your computer's manual certainly should contain such information. IDE and SCSI ribbon cables look different, too. IDE ribbon cables contain 40 wires, and they usually connect to the motherboard, while SCSI ribbon cables contain

The technology behind the EIDE standard has other names, such as Fast ATA and High Performance ATA. EIDE is an expansion of the IDE standard, especially surpassing the older standard in four ways:

- The EIDE standard supports larger hard drives (more than 528 megabytes [MB] up to eight gigabytes [GB]), which are found more often in newer PCs. IDE only works with hard drives smaller than 528MB, unless you use a **device driver**. SCSI hard drives have no maximum storage limit. (Device drivers are software that acts as go-betweens for the programs and devices in your PC, ensuring that the devices understand the software's commands.)

- It enables a single adapter to handle as many as four hard drives, doubling the capabilities found in the IDE standard.

- Other devices, such as a CD-ROM drive or a tape drive, can be connected to the adapter. An IDE adapter only can work with hard drives.

- Under ideal conditions, the fastest hard drive access times are obtained with EIDE at 11MB to 16MB per second. Access time for an IDE hard drive is usually 2MB to 4MB per second; for a SCSI hard drive, it's usually 5MB to 10MB per second. Your actual access times probably won't be quite as good as the ideal times.

Unfortunately, to reap the benefits of EIDE, you must have it built into your system. You can't install an EIDE hard drive in a computer with an IDE interface and expect the hard drive to perform under EIDE standards. Some special IDE adapters will support the larger EIDE hard drives, but they don't support their increased speed.

SCSI

Small Computer System Interface (SCSI) is a standard

used extensively with external CD-ROM drives, as well as scanners and backup tape drives. It takes a backseat in popularity as a hard drive standard to IDE, though. When people talk about "scuzzy" devices, they're discussing SCSI.

As many as seven SCSI devices can be connected to a single SCSI port or interface card, which makes it advantageous because you won't need an expansion card for each SCSI

hardware device you add. Also, because each device connected to the SCSI interface card uses the card's IRQ line, you'll minimize the potential for IRQ conflicts. (An IRQ [Interrupt Request Line] is the physical hardware connection over which computer components send interrupts, or requests, for service to the microprocessor.)

One drawback to SCSI: If you connect more than one or two devices to the SCSI port, it can be difficult to make all of the devices work together. You'll need plenty of patience if you're going to tackle this task. It is easier to use SCSI now than in the past, but most users still aren't brave enough to have more than one or two devices connected to the port. If you're planning to connect multiple devices using SCSI technology, be sure you have a high-quality SCSI ribbon cable; it will enhance your chances of coming up with proper connections.

Macintosh computers contain ports for using the SCSI interface,

but they don't contain IDE ports. IBM-compatible PCs are the opposite. They rarely contain a built-in SCSI interface, meaning you will usually need to buy a SCSI expansion card to use SCSI devices. One advantage of SCSI hardware devices is their ability to be used with either Macs or IBM-compatible PCs, as long as you use the proper configuration and have SCSI interface capabilities.

Devices in a SCSI interface are

As many as seven SCSI devices can be connected to a single SCSI port or interface card.



connected along a **chain**, meaning the interface expansion card is hooked to the first device, which is hooked to the second device, and so on. A ribbon cable serves as the chain connecting each device. Using jumper switches, you must assign each device along the chain a unique identification number between 0 and 6. (The large number of jumper switch possibilities can cause some of the conflict problems we discussed earlier.) If you're installing a SCSI hard drive, make certain the hard drive you want to boot from is assigned a zero. CD-ROM drives, for example, are usually assigned identification numbers between 3 and 5. Assigning the same identification number to two or more

devices along the same chain can cause system crashes and potential losses of data, so you must use caution whenever attempting to assign identification numbers. (Disk formatting software and other programs are available that can recognize the identification numbers of each SCSI device.)

You'll need a terminator at either end of the SCSI chain because the terminators help reduce stray noise (called **electrical echoes**), which build up along the chain as electrical signals are created. Without terminators, some devices along the chain will attempt to interpret the echoes as actual electrical signals, and your SCSI devices will not work properly.

The chain configuration used with SCSI devices often works faster than other standards because the devices contained on the chain can communicate with each other without taking time to access the microprocessor.

External SCSI devices require you to turn them on before you boot your computer, or the computer may not recognize them. In fact, you should turn on *all* external devices along the SCSI chain so no electrical signal interruptions will occur. You also should shut down the computer entirely before turning off the external SCSI devices to avoid power surges.

Alphabet Soup

As you can see, the difference among the three types of devices we've described is much more than a few letters of the alphabet. Deciphering acronyms is a key to judging various computer products. We've only given you a head start, though; you'll have to try bps, MB, MHz, CMOS, RAM, and the dozens of others on your own. ●

by Kyle Schuman



Need help with your hardware or software?

Looking for simple explanations on technical subjects?

Send us your questions!

DELTREE might not purge your old DOS perfectly, but it'll still free up several megabytes of space.



WINDOWS 3.1

Q: I have an old 286 not suitable for Windows 3.1, but I need to run Excel. One friend said that versions 2.5 and older of Excel used to run without Windows, but another friend says that's impossible. Who's right?

A: They're both sort of correct. Excel, Ami Pro, and a few other Windows programs were popular before Windows was widely used. These early versions were distributed with a Windows Single Application Environment (SAE) on their installation diskettes. This was an abridged version of Windows that started from DOS as Excel began to run. Once that Excel is running, you are running Windows, call it that or not. Excel always has been a Windows-only program. Microsoft supplied the hidden, stripped version of Windows with it to give DOS users just enough Windows to run Excel. They also hoped that would encourage you to buy a full version of Windows. Rest assured that the old Excel bundled with Windows SAE will run on your 286. And, contrary to your belief, Windows 3.1 will run on a 286. A few features would disable themselves (and many newer programs demand a 386 or higher), but as long as the 286 has at least 2MB of RAM (4MB or more recommended) Win 3.1 will run fairly adequately.

Q: I found a very old version of Windows 286 intended for an IBM 286. Can I install it on my 386 and either run it or use it as "proof of purchase" so I can upgrade to a later version?

A: You can indeed use that software to upgrade from (call Microsoft 800/426-9400). And it would run on a 386. But, though stained-glass, real windows may appreciate in value with age, Windows software doesn't. We hesitate to recommend versions of Windows before 3.1, and we quake in horror at using anything older than version 3.0. The unreliability, incompatibility with newer programs, lack of anyone to ask how to run or fix it, and vast improvements made in Windows 3.1 (1992) all say that running the ancient Windows is foolish. What's more, version 3.1 runs faster than the ancient version.

Q: I recently installed a new Conner CFS850A 850MB hard drive. I used the included EZ-Drive utility to install it. It works fine in

DOS

DOS COMPUTING

Q: I found your series on PC DOS 7.0 interesting. My computer is currently running MS-DOS 5.0. Is it possible to upgrade from MS-DOS to PC DOS 7.0?

A: Sure! IBM likes nothing better than switching you from a Microsoft product to theirs. You can be certain they've done everything possible to make that move painless. By the way, unlike many DOS packages in stores (which are "upgrade" packs requiring a previously installed DOS), every box of PC DOS 7.0 can upgrade an existing older version or install on a computer that's not running DOS; it's a "full pack" not just an "upgrade." That means if push comes to shove, you could delete your old DOS and then install PC DOS. With an "upgrade pack," if you accidentally trash your whole drive's contents and need to reinstall DOS, an upgrade pack will refuse to reinstall because it sees no "previous" DOS there to "upgrade."

Q: In Q&A a few months ago, you mentioned using the DELODOS command to remove older versions of DOS. My consultant who installed my MS-DOS 6.22 upgrade left a note in my old DOS directories warning not to delete the old DOS unless I was sure I wouldn't need it to install other software. Now I have two OLD_DOS directories. Do I need them?

A: "To Delete, or not Delete, that is the question. Whether 'tis nobler to suffer the slings and arrows of a drive space shortage, or . . ." Well, anyway, though it's prudent to not remove things until you're sure you don't need them, there still comes a time when you need to tow away that rusting, dead '72 Toyota behind the garage. It's rare to find a program that would, say, run under DOS 3.30 but not under DOS 6.22. And even if you found one, would you be willing to revert to DOS 3.30 just to run it? Go ahead and get rid of your old DOS junkers. Just type deloldos, and zap them to DOS heaven. If the DELODOS command isn't there, removes only one old directory, or doesn't work at all, you can remove the directories with the DELTREE command.



OS/2



DOS 6.2 and Windows 3.1. During the install, EZ-Drive advised me to type REM in front of a line in the OS/2 Config.sys file located on my first OS/2 installation diskette if I intended to install OS/2 Warp. The line I was told to "REM out" was "basedev=ibm1s506.add". I installed OS/2 and am very disappointed with its speed—it seems to take forever to start up and go from window to window. And it seems to be shifting my hard drive into overdrive. My computer is a Packard Bell 486SX25, with 4MB RAM. What's the problem?

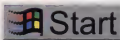
A: This is one of our favorite gripes: software "disk drivers" such as EZ-Drive that let drives with more than 528MB work on older (pre-1994) computers whose BIOSes or IDE-adaptor cards are otherwise incapable of dealing with these oversized drives. Unfortunately, such drivers are too often installed on computers that don't need them. (Your particular computer may or may not have needed EZ-Drive.) Worse yet, they sometimes end up either "conflicting" with something or (as in your case) impairing performance. To run without EZ-Drive you'd need a new Enhanced-IDE adaptor card, or a smaller hard drive.

As for OS/2's RAM needs: When Warp first came out, we installed it on a 4MB machine to see whether IBM's claim that 4MB RAM was enough was baloney. To our surprise, it actually was. We would have been foolhardy to try running several programs at once, but single programs worked fine as long as we didn't expect instantaneous response. In our opinion, Warp on our 4MB 486DX33 wasn't slower than Windows 3.1 with 4MB RAM, but we recommend more.

If you're not using HPFS (the optional High Performance File System), type rem in front of the HPFS.IFS line in your Config.sys file; OS/2 might perk up. But another 4MB of RAM is what OS/2 really wants. One way to estimate how much RAM you need is to keep an eye on the Swapper.dat swap file, which grows as you use virtual memory and shrinks as you free it.

Having said all that, there's still hope, even if you don't buy more RAM. "Basedev=ibm1s506.add" is a line that helps OS/2 talk fast to your disk. EZ-Drive's advice to "REM out" that line applied only to the October 1994 release of OS/2 3.0 for Windows GA code level (in a red-edged box). Using REM probably forced OS/2 to use a slower way of talking to your hard drive, thus making your fast hard drive behave like an ancient slower one. In the older version of OS/2, you had to put up with that, but OS/2 Warp's faster disk access has been enhanced to work along with disk management software (e.g., EZ-Drive). If, as it seems, you own the older version of OS/2, you need to install the full version of the OS/2 3.0 for Windows FixPak 05 update utility. The files you need are: Wfp_05.zip, Wkickr.zip, Readme.1st, and Readme.2nd, which can be found in OS2SUPPORT Library 23 on CompuServe or the US BBS

(919/517-0001). Download and unzip the files, and refer to Readme.1st. Or call IBM and ask for the FixPak.



WINDOWS 95

Q: I have Windows 3.1 and am upgrading to Windows 95. I want to keep Windows 3.1 and run Win95, but I understand that they boot up my computer differently. Can I run both if I'm willing to "reboot" each time? I'd ultimately like to have separate bootable Win95 partitions.

A: Your concern that Windows 3.1 and Win95 need different settings in your startup files (Config.sys and Autoexec.bat) is warranted. That's one of many reasons why we don't recommend trying to run both; even if you get them going, each may occasionally try to revise your startup files for its own needs and trip up the other. If you must run both, however, your idea of giving each version its own partition, with its own stable of programs, is the safest way. (A partition is a separate area of the disk that's treated as if it were a separate hard drive. For more on partitioning hard drives, see "FDISK" in the January 1995 issue of PC Novice.)

There are two programs that will do what you want, even with just one hard drive with just one partition: BOOTCON (Modular Software Systems, 800/438-3930), and Boot Commander (V-Communications, 800/648-8266).

And, here's a trick to do what you want without buying boot software. For this approach you'd have to use the FDISK command, "partition" your hard drive into two sections, then install Win95 in one and Windows 3.1 in the other. (Caution: When repartitioning using FDISK you normally lose, and must reinstall, everything on your drive.)

1. Copy your current Config.sys and Autoexec.bat files onto a diskette. Then copy your old DOS directory onto diskettes or tapes. These will get modified during your Win95 installation.
2. Reinstall (or move) Windows 3.1 and copy your old DOS directory onto your D: partition. Then restart your computer to make sure Windows 3.1 is running right on D:.
3. Make a bootable diskette that has the Config.sys you presently use for Windows 3.1. In Config.sys, change the line that reads:

```
SHELL=C:\DOS\COMMAND.COM C:\DOS\ /E:1024/P
to read:
```

```
SHELL=D:\DOS\COMMAND.COM D:\DOS\ /E:1024/P
```

4. Copy your current Autoexec.bat file for Windows 3.1 into the root of your D: drive (partition).
5. Change any references to C:\WINDOWS and C:\DOS in that Autoexec.bat file to D:.
6. Put a different Autoexec.bat file on the bootable diskette, placing only the following lines in it:

WINDOWS 95 (cont.)

```
prompt win31 $p$g
d:
cd \
copy a:config.sys d:\config.w31
echo REM This is an extra copy of the Win3.1 Config.sys
file >> D:\config.w31
echo REM The original of which is kept on a bootable
diskette>> D:\config.w31
Autoexec.bat
```

When you boot from this diskette, the last line turns over control to the Autoexec.bat on your D: partition instead of the one on your C: drive. That way Windows 3.1 has its private Config.sys on the diskette. Now, if you boot with that diskette in your A: drive, you can run with Windows 3.1 and/or MS-DOS 6.0 on your D: partition, whether Win95 is on C: or not, and independent of how Win95 set up its Config.sys and Autoexec.bat on your C: drive.

After ensuring that you can run 3.1 reliably from your bootable diskette, you can either (a) format your C: partition and do a "clean" install of Win95 there or (b) install Win95 on top of Win3.1 in your C: partition.

To recap, when you want to run Windows 3.1 on your D: partition, boot with your diskette; to run Win95, boot from C:. Also watch out when installing programs from Windows 3.1—check if the installation makes changes to the Win95 Autoexec.bat or Config.sys files on your C:. If so, manually "move" those changes to the Config.sys file on your diskette and the Autoexec.bat file on your D: partition.

UTILITIES

Q: What's the story behind the Power.exe utility that comes with MS-DOS 6.0? It has something to do with saving power by slowing down the computer when it's not busy, I know. But, then my "green" motherboard's BIOS has power-saving settings for when the screen, CPU, or drive "idles" and there are memory-resident utilities from vendors, such as my MGREEN software that came with my Optique monitor that can put my monitor into "sleep" mode. Should I run them all? Is Power.exe an obsolete utility?

A: There are different parts of computers that potentially can manage power and put various parts of the system to "sleep" when idle, thus saving power and wear. Simply put, if you have "power control," "power management," or "Advanced Power Management" (APM) settings in your BIOS setup (see "Changing Your Computer's Battery" in our March 1995 issue), this is the first place from which to try managing power. If that doesn't work, try the power management facilities in Win95 (if you have it), then try any utilities that came with the video card, and if all else

fails, try Power.exe. Use the minimum you need; if your BIOS is successfully shutting down your CPU, hard drive, and monitor, don't activate any other power-saving methods.

Although you can run Power.exe along with the power management facilities of the BIOS Setup, you still can install Power.exe (into your Config.sys file) even if your BIOS doesn't have power management. To learn more about it, type `help power.exe` and `help power` at a DOS prompt.

When Power.exe detects that your system is idle, it saves power by telling your CPU to idle until it's needed again. On systems without an APM-compliant BIOS, Power.exe saves only about 5% of your power. Worse yet, Power.exe sometimes may incorrectly think your computer is idle if you're using communication programs, computation-intensive programs, or other programs that don't do much with your hard drive and mistakenly halt or slow down your CPU, crippling a program's performance.



COMPUTER HARDWARE

Q: I have a 33MHz 486DX that doesn't have a Pentium OverDrive socket, nor does it have the extra pins in its CPU socket that are needed to plug in an Intel Pentium OverDrive CPU. Am I out of luck?

A: You are, for a true Pentium. But you also may want to look into the new Cyrix 5x86 CPU. It's supposed to drop right in the existing 486 socket and offer performance on par with a 75MHz Pentium at much lower cost. You may still have a short wait before you see it available in repair facilities and upgraders. Cyrix does not represent it as an upgrade CPU because it may or may not work in motherboards not originally designed for it, but some reports indicate it will work fine for that. And, of course, the Intel 486DX4/100 OverDrive CPU, which gives performance slightly below a Pentium OverDrive, also will work for you and at less cost.

Q: I have a 1,000MB hard drive (with about 600MB used), but my QIC-80 backup tape (Jumbo 250) holds only 250MB on a DC1220 tape. When I run a full backup, the backup software asks me to insert additional tapes (it usually takes three tapes to complete the process). I can live with the nuisance of changing tapes, but I've noticed that restoring files from my multi-tape backups is unreliable. More often than I like, I've been unable to restore from Tape 2 or Tape 3. I've been through extensive troubleshooting with technical support, and one tech admitted that if I really want reliable restores, I need to get a tape drive that can record 600MB on a single tape (she suggested their 800MB Travan drive). Isn't there any other solution?

A: Yes. Although backups spanning multiple tapes usually restore okay, we've seen enough cases where they don't to share your uneasiness about them.



COMPUTER HARDWARE (cont.)

"Usually" isn't good enough if your only backup of your Master's thesis is on that second tape and you can't get at it. One alternative is the newer 2120XL tapes that will hold 340MB on each, needing just two tapes, not three. Even better are oversized, just-released QIC-EX tapes.

The tape you need is Verbatim's DC-2120EX. (There's also an MC-3020EX to stretch the capacity of the somewhat newer QIC-3020 420MB tape drives.) At the moment, these EX tapes are made only by Verbatim. As we've mentioned, the neat thing about them is that they'll work in your older QIC-80 250MB or 340MB drive and, with a software upgrade (from Verbatim or your drive's manufacturer), provide nearly 1,000MB storage on one tape! (Don't confuse these tapes with similar-looking "Travan" tapes; those are also high-capacity tapes, but they work only in the new Travan tape drives.)

Q: I recently installed a new, one gigabyte (GB) Western Digital Enhanced-IDE hard drive in my 486 and had many troubles that were traced back to having what I'm told is a "large partition manager software driver" from Microhouse International. Colorado said that the Microhouse version was incompatible with its backup software and sent me a patch that would make them compatible. The "patch" directions warn me not to install it unless I back up first! But I can't back up or I wouldn't need the patch! I have 150MB of data on the drive. What can I do?

A: We've mentioned before that such "software" drivers that come with hard drives larger than 528MB can cause compatibility problems and that we avoid them if possible. Technical support reps we've spoken to share our distaste for these drivers. Such drivers are sometimes needed because older computers (or the cards in them that connect to the drive) are incapable of "seeing" more than 528MB.

From other information in your letter (which we didn't include here), it's clear that in your case the driver wasn't needed in the first place. Some retailers routinely install these drivers when you buy a new drive, whether they're needed or not. This is a poor practice; it gets you out the door, gets them their sale, and future difficulties are your problem, not theirs. Although Microhouse drivers usually work fine, yours isn't the first problem we've seen with that brand. Once installed, it clamps onto your drive like a pit bull, and it's tough to remove. Whether you want to update the Microhouse driver or kill it, you first must get your data safely out of your drive. You can:

1. Try a different brand of tape backup software.
2. Run the MSBACKUP utility in DOS and Windows (see the DOS Command Dictionary in the June 1995 issue).
3. Copy your hard drive to diskette using the DOS XCOPY command (if you can't get MSBACKUP to run).

Remember that XCOPY is much slower than MS-BACKUP, takes about twice as many diskettes, and won't format or erase the diskettes. (For more information, type `help xcopy` at the DOS prompt.) Run the ATTRIB command by typing `attrib -a *.* /s` to get a list of all the files that have not been backed up. Then type `xcopy c:\.* a:\ /s/m/e` to copy to the A: drive all files that have not been backed up and mark each file as having been backed up. When the first diskette is full, you'll get an "Insufficient Disk Space" message; put a blank, formatted diskette in the drive, press F3 (which retypes the XCOPY command at the prompt), and XCOPY will pick up where it left off.

4. Use MSBACKUP or XCOPY to copy to the diskettes just the stuff you really can't afford to lose.
5. Killing that Microhouse driver is tough. You can try typing `fdisk /mbr` at a DOS prompt. (Caution: This may wipe out your drive's contents. Don't run this command until you have everything you need off the hard drive and know how to reactivate the drive using DOS's FDISK and SYS commands; you also have to copy these onto a bootable diskette.) After doing this, go into your CMOS Setup, and tell your computer to use LBA mode so it can run the full 1GB hard drive without the Microhouse driver.
6. Take the computer back to where you got the drive installed, insist they temporarily connect a second hard drive to your computer, XCOPY everything to the spare drive, kill the Microhouse driver, set up your drive to run properly without it, and XCOPY everything back from the spare drive.
7. While you, or the dealer, are running FDISK, consider splitting (partitioning) your hard drive into two partitions that are less than 1GB each.



ONLINE COMMUNICATIONS

Q: I subscribe to several Internet mailing lists that periodically E-mail articles to my CompuServe E-mail box. On some lists, I'm supposed to be able to send replies to articles, which are then supposed to be broadcast to others on the mailing list. But when I press the Reply button in my E-mail interface, my reply only goes to the person who wrote/posted the original article. Before I realized this was happening, I was unknowingly responding to only one person when we intended to send the response to 50 people, thus breaking the flow of the ongoing conversation. This does not happen to other members of the mailing list who are on America Online or with direct Internet providers. CIS has explained this and said that it will fix it eventually. But what can I do for now?

A: The ability to respond to all the subscribers is a common feature of some Internet mailing lists. If you look at the top lines of the articles (messages) you receive from such mailing lists you'd see, for example, lines that say:



ONLINE COMMUNICATIONS (cont.)

Sender: owner-mediators@www.legalworks.com
Reply-To: root <mediators@www.legalworks.com>

But CompuServe E-mail was designed before the Internet was very active and doesn't know about these header lines. It reads only the "Sender," not the "Reply To," thus replying to the only return address it paid attention to.

Here's what you can do:

1. While reading the incoming message, copy the Reply To address by highlighting it and pressing CTRL-C. In our above example, you'd copy the "mediators@www.legalworks.com".
2. Click Reply.
3. When the Reply To message window opens, press the Address button (which will at first be showing the address of the original sender).
4. When the Recipient List window opens, press SHIFT-INSERT to put the address of the mailing list server into your Name box.
5. Press TAB to move your cursor to the Address line, type internet, and press SHIFT-INSERT again. This enters the proper Internet mailing address of the list you want to broadcast from as the place to reply to.
6. Click Add. Your reply will be routed back to the list server and to the original sending person; highlight the person's individual address and click Delete, then OK.

Q: When I first installed my CompuServe WinCim 1.4 software, everything worked fine. Now I can't upload files from my computer into CompuServe forums. CompuServe tech support has been helping me for weeks by giving me new and more complicated "modem initialization strings" to use with my modem software. Am I barking up the wrong tree?

A: Before you spend more time messing with your modem configuration, which can be a rather tedious process of trial-and-error, you may want to see if your problem isn't elsewhere.

Go into your E-mail functions, and see if you can both send mail and upload a file there. If you can do that, but can't in forums, the problem is probably not your modem configuration since you're using the same modem configuration in both cases. This hints at a problem in the Forums.db file in your \C:\SERVE\SUPPORT directory. If that's the case, you may be able to fix everything by deleting that file. To do this from DOS, type:

```
cd \cserve\support
```

at the C> prompt to get into the right directory. Then type:

```
del forums.db
```

and press ENTER. You lose nothing significant by deleting Forums.db, but if you're worried about that you always can make a copy before deleting it.



WORD PROCESSING

Q: I run WordPerfect 6.0 for DOS on my 25MHz 486SX Packard Bell. When I start the program, before the WordPerfect 6.0© blue screen, there's a blank screen. At the top of the blank screen are the words "LC: Windows 3.X Enhanced detected, Task Swap API disabled." What does that mean? What, if anything, should I do about it?

A: WordPerfect 6.0 for DOS comes with a neat Launcher feature, which is a task-swapper that lets you have several tasks (such as the letter you're writing in WordPerfect or the check register in Quicken for DOS) open at the same time so you can swap back and forth among these tasks. Normally, WordPerfect 6.0 tries to start up Launcher for you when it starts. But in your case, WordPerfect has noticed that you have Windows running and that you're running WordPerfect 6.0 for DOS "under" Windows. Because Windows is a task swapper, WordPerfect has decided there's no point in starting up Launcher. In short, the message is saying "I know you're running Windows 3.0 or 3.1 and I'm not going to start my Launcher." The message is information, not an error, and perfectly normal. You can turn off the message by adding the /DL switch (for Disable Launcher) to end of the line your Windows icon uses to start WordPerfect for DOS.



MISCELLANEOUS SOFTWARE

Q: Where can I get a DOS-based fax program for my U.S. Robotics modem?

A: DOSFAX-PRO from Delrina (800/268-6082) would probably work. We also recommend calling U.S. Robotics.

Fax software in DOS is more complicated to install, run, understand, and use than Windows-based programs. At the risk of sounding like evangelists for Bill Gates: The little everyday advantages of Windows, which are not often talked about, are precisely these kind of little things. Windows-based fax software is easier to use and install. For example, unlike many DOS faxing programs, all the fonts you normally use are automatically available in your faxes, and while sending a fax you still can be working on other things in another window. ●

Get straight answers to your technical questions. Ask PC Novice! Send your questions to PC Novice Q&A, P.O. Box 85380, Lincoln, NE 68501.

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PCNOVICE

GUIDE TO

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COMPUTING BASICS



On Newsstands January 9th!

If you buy only one computer magazine this year, the *Guide to Computing Basics* should be it! Written in the same plain-English style as *PC Novice*, the *Guide to Computing Basics* will help everyone with their PC questions. Whether you just bought a PC or you've been using a PC for years, this issue contains everything you need to know.

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Guide to Computing Basics

GLOSSARY

Of Terms

Active-Matrix Display—Also called the Thin Film Transistor (TFT) display. An LCD display with a transistor is assigned to each pixel, making it much brighter and clearer than passive-matrix screens.

Autoexec.bat—A special file containing instructions that are carried out every time the computer system is (re)started. These instructions help the computer get set up and find certain programs.

Bit—The smallest unit of computer data, represented either by a 1 or 0. Eight bits form one byte, which represents a single character.

Boot Up—The term describing the series of steps that takes place when you turn on the computer. In the boot process, the operating system (i.e., DOS) is loaded into the computer's internal memory (RAM).

CD-ROM—Compact Disc, Read-Only Memory. A form of data storage that uses laser optics rather than magnetic means for reading data. CD-ROMs read compact discs similar to the audio CDs available in music stores.

CPU—Central Processing Unit. The "brain" of the computer. The type of CPU, or microprocessor, that a computer has determines what type of system it is. The 80386, 80486, and the Pentium are all processor chips, or CPUs.

Config.sys—A text file DOS consults at system startup. This file contains commands that tell DOS how to communicate with new hardware, customize communications with existing hardware, or adjust your computer's memory usage.

Diskette—A flat piece of flexible plastic covered with a magnetic coating that is used to store data. The existing standard for diskette size is 3.5 inches. Older diskettes also come in 5.25-inch sizes.

Diskette Drive—Writes data to and reads it from diskettes that can be removed at will. The two existing standards for diskettes are 5.25 inches and 3.5 inches.

Expansion Cards—Electronic circuit cards that fit into slots on the main circuit board inside the case of the computer (called the motherboard). Expansion cards are used to add such items as faxes, modems, sound capability, and ports to a PC.

Expansion Slot—A socket inside the computer case that is designed to hold expansion cards.

GB—Gigabyte. A unit of computer storage equaling approximately 1 billion bytes.

GPF—General Protection Fault. An error generally connected to software, but that also can be caused by hardware. This is Windows' way of warning you that a program has tried to access a portion of RAM that is supposed to be protected from just such an unauthorized intrusion.

Hard Drive—A non-removable, high-capacity storage medium inside the computer's case that stores programs and data.

IDE—Integrated Device Electronics. A disk drive interface that eliminates the need for a separate adapter card because the controller electronics reside on the actual drive.

IRQ—Interrupt Request Lines. The wires that connect your microprocessor to hardware devices. IRQ lines let the hardware components request their share of attention from the microprocessor. Each line has its own "address" in the computer's memory.

Jumpers—A group of small metal pins with plastic blocks covering some of the pins. By changing the position of the blocks (which contain tiny electrical connectors), you can change the settings of a hardware device.

LCD—Liquid-Crystal Display. A technology used in many types of electronic displays from calculators to portable computers. LCD screens are flat and lightweight, but they are not bright and can seem fuzzy.

MB—Megabyte. A unit of computer memory equivalent to approximately 1 million bytes.

Microprocessor—An integrated circuit containing all the central processing functions of a computer; also called a central processing unit (CPU).

Motherboard—The printed circuit board that is the foundation of a PC system. This board contains the computer's CPU (central processing unit), RAM (random-access memory) chips, and expansion slots that enable you to add more functions to your PC.

Operating System—The master control program that translates the user's commands and lets application programs interact with the computer's hardware.

Parallel Port—Connects peripherals, such as a printer, to a computer. These ports are commonly referred to as LPT1 or LPT2.

Passive-Matrix Display—An LCD screen usually used in portable computers. Passive screens are not as bright or sharp as active-matrix displays.

RAM—Random-Access Memory. The temporary memory storage area used to load program instructions and store files currently in use. Unless a file is permanently stored on a hard drive, diskette, or other storage medium, changes to information stored in RAM will be lost because RAM is cleared when a computer is turned off.

SCSI—Small Computer System Interface. Used for connecting computers to peripheral devices (i.e., CD-ROM drives or printers), other computers, and local-area networks. Peripheral devices are attached to a single SCSI port through a series of connections called a daisy chain. Each device is assigned a priority number or address. Transmissions through the port occur one device at a time, and peripherals with the highest priority number are the first in line for transmission.



800 Reader Service

To request additional information on the following products and services advertised in *PC Novice*, call the number provided by the advertiser. When calling the manufacturer, please mention *PC Novice*.

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IFC=Front Cover

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Letters To The Editor

Dear *PC Novice*:

Regarding your article "Fake RAM: Does It Fulfill Real RAM Promises?" (January 1996), my response is a resounding NO! I realized I needed more RAM and decided to try a RAM-multiplying program. After installing *MagnaRAM*, I could not even load Windows. I spent hours on the phone with technical support while they suggested countless changes to system and .INI files. But the computer kept crashing no matter what I was doing. I wish I had seen your article before even considering a so-called memory doubler.

Leslie R. Pratt/Brockport, NY

Dear *PC Novice*:

As someone who experimented with "Fake RAM" software before reading your article, I wish I had waited for your analysis. You're correct that *SoftRAM 95* is a waste of money. I should mention, however, that on a 486SX2 with 8MB of RAM, *MagnaRAM 2* actually increased performance and added another megabyte. When I upgraded to 16MB, *MagnaRAM 2* stretched my memory to 20MB.

Robert DeSalvo/Los Angeles, CA

Dear *PC Novice*:

Amen to Bonnie Coombs' letter in the December 1995 issue. I do not have a CD-ROM drive. With the rush to buy CD-ROMs, I thought there would be many programs on diskettes, at lowered prices, to choose from. Not only do the stores no longer stock these, but even *PC Novice* uses a lot of space advertising CD-ROM software. I could use more information on basics, hands-on upgrades, and just general information on the best ways to make my computer work efficiently.

Carol L. Maglin/Penacook, NH

CORRECTIONS/CLARIFICATIONS

In "Computer Secrets Every Novice Should Know!" (January 1996), we provided the incorrect Internet address for *WinNews*, an online Windows newsletter. To subscribe, send an E-mail message to enews@microsoft.com and type the keywords **subscribe winnews** in the subject line and body of the message.

In "Cutting Through The Runaround" (January 1996), the number listed for Canon's fax-on-demand service was incorrect. The correct number is (800) 526-4345.

Letters to the Editor should be sent to: *PC Novice* / P.O. Box 85380, Lincoln, NE 68501-5380. Letters may be edited for clarity or space.



FAX

FEEDBACK



**HELP US
HELP YOU!!!**

In upcoming issues of *PC Novice*, we will have articles focusing on upgrading different components of your computer. To do this, we need to know if you plan to upgrade in the next year and which components your upgrading projects will involve.

By filling out the questions on this page, you will help us focus our articles on the upgrading information you need most.

To show our appreciation for your comments, we will randomly select one Fax Feedback participant to receive a *PC Novice* T-shirt.

If you do not have access to a fax machine or would prefer to mail your response, please address your comments to:

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402-479-2104

Topic of the month ... **Upgrading**

Here's your chance to tell us the upgrading information you will be needing.

1. Do you plan to upgrade any components of your computer(s) in the next year?

- ☐ Yes
☐ No (If "No," go to question #6)

2. What kind of system(s) do you have at home? (Please check all that apply.)

- ☐ Pentium ☐ 8086/8088
☐ 486 ☐ Macintosh
☐ 386 ☐ Other: _____
☐ 286

3. Which components do you currently have at home? (Please check all that apply.)

- ☐ External hard drive ☐ Printer
☐ CD-ROM drive ☐ Modem
☐ Tape drive ☐ Other: _____

4. Which of the following do you plan to upgrade in the next year?

- ☐ CPU (Pentium, 486, etc.) ☐ Tape drive
☐ Hard drive ☐ Printer
☐ CD-ROM drive ☐ Modem
☐ Motherboard ☐ Other: _____

5. Do you plan to do the upgrading yourself or have someone else do it?

- ☐ I plan to do it myself.
☐ I will be having a friend/relative/co-worker do it.
☐ I will be having a computer service center do it.
☐ Other: _____

6. What are your chief concerns when buying new hardware?

We look forward to hearing from you. Thanks for your time!

Name and address:

 This is optional but necessary to be included in the drawing.

Name: _____

Address: _____

Phone: (_____) _____

Imminent Failure

It's Not A Question Of Whether You'll Need Backup Data, But When

Some people believe in the tooth fairy. Some believe in Santa Claus. And some people believe that technology is a magical cure for all the world's problems.

Be careful that you don't let yourself get caught up in the hyperbole surrounding high tech. Computers, fax machines, color printers, and the like make great tools for home and business, but they're not miracle-makers. They can't take a bad business idea and turn it into a good one. They won't save your marriage, end world hunger, or bring world peace.

Too many people fall in love with the idea of technology, rather than viewing it as a means to a particular end. Personal computers are especially notorious for exuding an air of mystique and unconquerable power. Forget it. PCs are just tools, like a stapler or telephone. They help you accomplish particular tasks. While they can greatly increase your ability to do certain things, they also have an Achilles' Heel: They fail. And always, it seems, at the worst possible time.

If you haven't yet experienced a pulse-pounding, data-gobbling disaster with your computer, just wait. Sooner or later you'll be in the middle of a critical spreadsheet or finishing off a monster report when your worst nightmare will happen: your PC fails. Totally. Your screen goes dark, your keys lock up, and your data disappears.

We know the feeling. Even as the issue you're reading was going to press, the PC Novice office, where two computers sit on every desk and network servers handle every file, resorted to old-fashioned, pencil-on-paper editing as information pit crews worked to restore files lost in the digital ether of our network. So much for thinking of your computer as a magical wonder.

Of course, if you're a regular reader of PC Novice, you've prepared for this day by making regular backups of all your files. You've got a full

backup for all your programs, incremental backups for recently created material, and even a system diskette that contains all the information needed to jump-start a dead computer. What's that, you say? You DON'T have backups ready and waiting for just such a day?

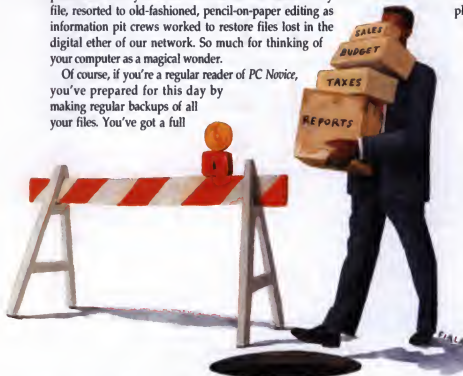
Time to make like a Boy Scout and get prepared. We know that performing a backup is probably the least glamorous thing you can do with your computer, but it's also one of the smartest. We're not kidding when we tell you that every computer will suffer some sort of data disaster during its lifetime. This means yours. If you're lucky, you'll lose only the document you're currently working on. At worst, you can write off your entire hard drive. All drives fail eventually; after all, they are mechanical devices. Sure, you might get 10 years of faithful service out of your PC. Some car owners rack up half a million miles before their engine gives out. Remember, though, that for every one of those cars that gets to the moon and back there are a thousand rusting away at the junkyard.

Few things in life are as frustrating as losing hours, days, or months worth of work, and then realizing it's not just "gone," it's gone FOREVER. After the screams and tears subside, you can start to kick yourself for not spending a few minutes each week saving your valuable data. A single diskette can turn a major disaster into a minor annoyance. Please, please, please, BACK UP your PC.

This is especially important if you're a newcomer to computers who wants to "experiment" with your system. Before you follow along with the tutorials in these pages; before you try out that new shareware program a buddy gave you at work; before your child starts indiscriminately playing chopsticks on your keyboard, please, BACK UP your PC.

Of course, maybe you're bullet-proof. Maybe you have a digital guardian angel who sits on your monitor and wards off the type of problems that everyone else runs into. Maybe you're the one person in the universe with an indestructible computer. Then again, maybe not.

By the way, what's that funny noise coming from your hard drive? ●





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PRODUCTS

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